NATURAL HISTORY

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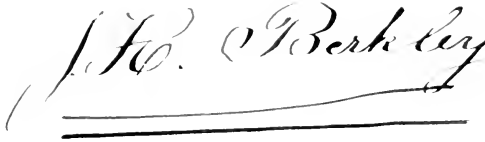


RICHARDSON'S

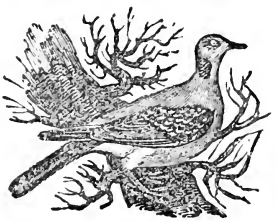
NATURAL HISTORY;

AN INTRODUCTION

TO

ANIMATED NATURE.

PROFUSELY ILLUSTRATED.



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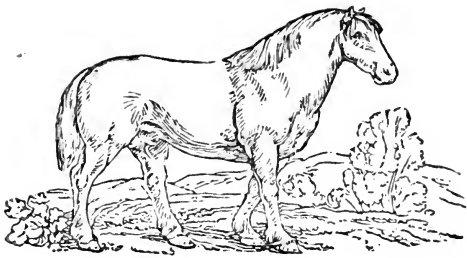

PREFACE.

In preparing this little Volume, it has been the Editor's aim to give, besides what is usual in works of this kind, in a clear and distinct manner, the characteristic differences of the various classes of animals. He has also pointed out the striking adaptation of the structure and conformation of their bodies to their habits and way of life, which so evidently show forth the wisdom and power of the Deity in this part of the creation.

In his account of the different animals, the Editor has entered more fully into detail respecting those that are the most interesting and useful to mankind, and this he has been enabled to do by allowing less space to those of minor importance.

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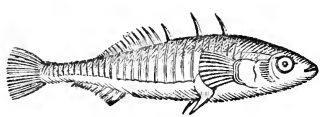
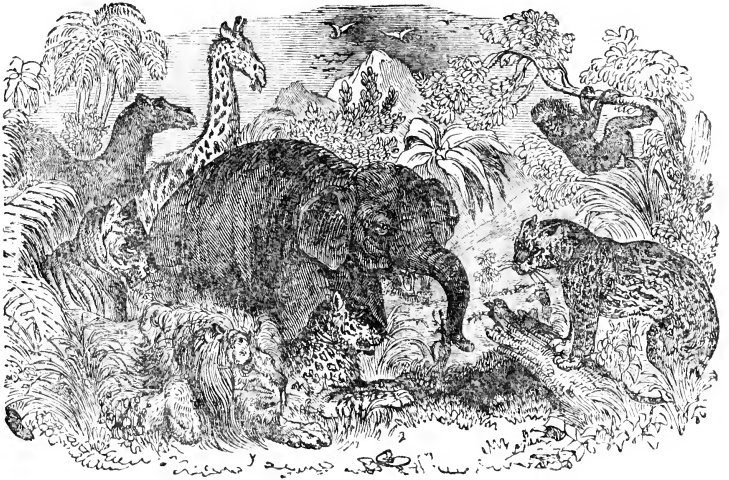




ANIMATED NATURE.

QUADRUPEDS.

In taking a cursory view of the form of quadrupeds, we may easily perceive that of all the ranks of animated nature, they bear the nearest resemblance to man. All their extremities correspond in some degree with ours, and present us with a rude resemblance to our own. In some of the ape kind the conformity is so striking that anatomists are puzzled to find in what part of the human body man's superiority consists.

The heads of quadrupeds, though differing from each other in general, are adapted to their way of living. In some it is sharp, the better to fit the animal for turning up the earth in which its food lies. In some it is long, in order to give greater room for the olfactory nerves, as in dogs, who are to hunt and find out their prey by the scent. In others it is short and thick, as in the lion, to increase the strength of the jaw and to fit it the better for combat. Quadrupeds that feed on grass are enabled to hold down their heads to the ground by a strong muscular ligament that runs from the head to the middle of the back; and by this they are able to bend them down for hours without being tired.

The teeth of all animals are entirely fitted to the nature of their food. Those of such as live upon flesh differ in every respect from such as live upon vegetables. In the latter they seem entirely made for gathering and bruising their simple food, being edged before, and fitted for cutting, but broad towards the back of the jaw, and adapted for pounding. In the carnivorous kinds,

they are sharp before, and fitted rather for holding than dividing their prey.

The legs of quadrupeds are no less fitted than their teeth to their respective wants or enjoyments. In some they are made for strength only, and to support a vast unwieldy frame, without much flexibility or beautiful proportion. Thus, the legs of the elephant and the rhinoceros resemble pillars; whereas those of deer, hares, and other creatures that are to find their safety by flight, are made entirely for speed, and are slender and muscular. The feet of some that live upon fish alone, are made for swimming. The toes of these animals are joined together with membranes, being web-footed like a goose or a duck, by which they swim with great rapidity. Those animals that prey upon others have their feet armed with sharp claws, which some can sheath and unsheath at will. Those, on the contrary, who lead peaceful lives, have generally hoofs, which serve them as weapons of defence.

The stomach is generally proportioned to the quality of the animal's food. Thus, in those that live upon flesh, it is small and glandular, whereas in such animals as live entirely on vegetables, the stomach is very large: and those who chew the cud have no fewer than four stomachs, which serve to convert their coarse food into proper nourishment.

In this manner all animals are fitted by nature to fill up some peculiar station. The greatest animals are made for an inoffensive life, to range the plains and the forest without injuring others. The carnivorous kinds usually catch their prey by a bound from some lurking-place, seldom attempting to attack them openly; for the larger beasts are too powerful for them, and the smaller too swift. In proportion as each carnivorous animal wants strength, it uses all the assistance of patience, assiduity, and cunning. However, the arts of

those that pursue, are not so great as the tricks of their prey to escape: were it otherwise, the forest would soon be unpeopled of the feebler races of animals.

Few wild animals seek their prey in the daytime; as soon, therefore, as the morning appears, the carnivorous animals retire to their dens, and the elephant, the horse, the deer, and the other inoffensive tenants of the plain make their appearance. But again, at night-fall the state of hostility begins, and the whole forest then echoes to a variety of different howlings.

Beasts of prey seldom devour each other, nor can anything but the greatest degree of hunger induce them to it. The most usual method with even the fiercest animals, is to hide and crouch near some path frequented by their prey, or some water where cattle come to drink, when they seize it at once with a bound. Many animals are equally careful of avoiding their enemies, by placing a sentinel to warn them of the approach of danger. They generally perform this duty by turns; and they punish such as have neglected their post.

The wild animal is subject to few alterations, and, in a state of savage nature, continues for ages the same in size, shape, and colour. But it is far otherwise when he is subdued and taken under the protection of man; his external form is altered by human assiduity, and this is one of the first and greatest causes of the variety that takes place among the several quadrupeds of the same species.

Next to human influence, the climate seems to have the strongest effects both on the nature and form of quadrupeds. In general, it may be remarked, that the colder the country, the more abundant and the warmer is the fur of each animal; it being wisely provided by nature, that the inhabitant should be adapted to the rigours of his situation. The disposition of the animal seems also not less marked by the climate than the

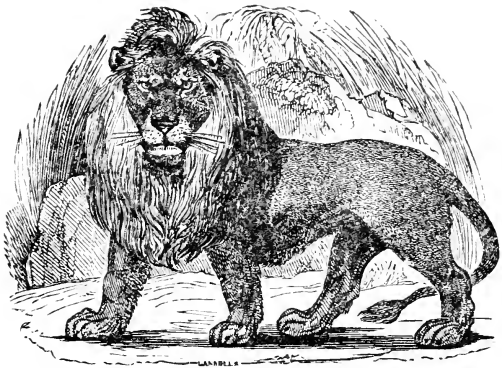
figure. It may indeed be in general asserted, that in all countries where mankind are most barbarous, there also the beasts are the most fierce and cruel.

Whatever be the reason, the fact is certain, that while America exceeds the Old World in the size of its reptiles of all kinds, it is far inferior to it in its quadrupeds. Thus, for instance, the largest animals of that country are the tapir, and the bison, but neither of them can by any means be compared to the elephant. Its beasts of prey also are divested of that strength and courage so dangerous in Africa. The tiger of Bengal has been known to measure ten feet in length, exclusive of the tail, whereas that of America seldom exceeds three. It is a general rule among all quadrupeds, that those which are large and formidable produce but a few at a time, while such as are small and weak are extremely prolific.

THE LION.

The majestic form of the lion seems to entitle him to the epithet of King of Quadrupeds; his striking appearance, his noble gait, and his terrific voice justify us in giving him that appellation. His body is well proportioned, and a perfect model of strength and agility combined. His large head, surrounded with a noble mane, the great breadth of his paws, armed with terrific talons, and the thickness of his limbs evidently proclaim him Lord of the Forest.

The mane, as well as the rest of the body, is of a tawny colour. The neck is short, but very strong and muscular, and the tail is so strong, that it is said he can with a single stroke of it throw a man to the ground. The tongue is extremely rough, and covered with prickles as hard as a cats claws. The teeth are so



LION. *Page* 1

CAT. *Page* 8.

strong that he easily breaks the bones of animals and swallows them with the flesh. His eyes are bright and fiery, and terrible even in death. His roaring is so loud, that when re-echoed by the mountains, it resembles distant thunder. The height of a full grown lion is about four feet, and his length eight feet, exclusive of the tail, which measures four.

It is in the great desert of Africa, in the burning sands that lie between Barbary and Negroland, that lions are found in the greatest numbers, and where their strength and courage are irresistible. A single lion of the desert often attacks whole caravans, and though overpowered by numbers, disdains to flee, and never gives up the combat except with his life.

As all animals endeavour to avoid the lion, he is obliged to have recourse to art, to take them. For this purpose, he hides himself in some thicket, and seizes them as they pass, springing on them at a distance of fifteen or twenty feet, and is generally successful at the first bound. It is said that he can sustain hunger for several days, but he is not equally able to endure thirst. In his wild state he requires about fifteen pounds of flesh a day, and always prefers that which he has just killed, seldom or never returning to the same carcase again.

Numberless accounts prove that the lion is noble in his revenge, magnanimous in his courage, and grateful for benefits received. He has been known to spare contemptible enemies, and pardon their insults when it was in his power to have punished them.

The lion is a long-lived animal; one that was brought from the river Gambia and kept in the Tower of London, died there above sixty-three years old; and the great lion called Pompey, that died in 1760, was known to have been kept there upwards of seventy years.

The race of lions seems to be diminishing; for the

whole of that part of Africa anciently called Libya does not now contain as many lions as the Romans used to import in a single year for their exhibitions.

The lioness is much smaller than the lion, and entirely destitute of a mane. She has four or five young ones at a birth, of which she is excessively fond. They are mild and playful, are nursed by the dam for a year, and attain maturity in about five years.

THE TIGER.

No quadruped is more beautiful than this animal; the glossy smoothness of his hair, the extreme blackness of the streaks with which he is marked, and the bright yellow colour of the ground which they diversify, render him the delight of the beholder. His disposition, however, is as mischievous as his form is admirable; notwithstanding the placid appearance of his looks, he is fierce and savage beyond measure; neither severity nor kindness have any effect upon him. To pride, courage, and strength, the lion joins magnanimity, clemency, and generosity; but the tiger is fierce without provocation, and cruel without necessity. The lion seldom ravages except when excited by hunger; the tiger, on the contrary, though glutted with slaughter, is not satisfied, but still continues the carnage. The tiger is chiefly found in Bengal, Malabar, and Siam, and in all the countries inhabited by the elephant and the rhinoceros.

When the tiger has killed a large animal, as a horse or a buffalo, he immediately begins to devour it on the spot, fearing to be disturbed. In order to feast at his ease, he carries off his prey to the forest, dragging it along with such facility, that the swiftness of his motion seems scarcely retarded by his enormous load. The

tiger is frequently eight feet long, and is sometimes met with upwards of ten feet, exclusive of the tail. Were this animal as common as the panther, or even as the lion, with such means to destroy, and with such an appetite for slaughter, the country would be uninhabitable where he resides; but fortunately tigers are extremely scarce, and have been so from the earliest period. About the time of the Roman emperor Augustus, Pliny says, that though panthers were brought to Rome by hundreds, a single tiger was considered as an extraordinary sight. The skin of this animal is much esteemed all over the East, particularly in China, where the mandarins cover their seats of justice with it.

THE PANTHER.

This animal has, by many naturalists, been mistaken for the tiger; and, in fact, it approaches next to it in size, fierceness, and beauty. It is distinguished, however, by one leading character, that of being spotted, not streaked. The body is yellow, and beautifully marked with round spots. He is about the size of a large mastiff dog, and is exceedingly fierce and blood-thirsty, and, like the rest of this species, catches his prey by leaping on it.

THE LEOPARD.

The main difference between the leopard and the panther is, that the leopard is smaller, and has a more beautiful coat. The spots also are smaller, and are not disposed in rings, but in clusters. This animal has frequently been called the panther of Senegal, where it is chiefly found.

THE OUNCE.

The ounce is much smaller than the panther, being at most not more than three feet and a half long; its hair is, however, much longer, and the tail still more so. The colour of the ounce is also different, inclining rather more to a cream colour, deeper on the back, and whiter underneath. Its spots are disposed pretty much in the same manner as in the panther, except that in the haunches it is rather marked with stripes than with spots.

THE LYNX

The principal distinction between the lynx and all those of the panther kind, is the shortness of its tail. Its fur, also, is much longer, the spots on the skin less vivid, and less distinct. Its ears are much longer, and tipped at the point with a black tuft of hair. The colour round the eyes is white, and the countenance placid and gentle. This animal is about the size of the ounce, but is more strongly made. It is particularly remarkable for the sharpness of its sight.

THE CAT

The cat is the only animal of this kind whose services have been turned to the use of man. Of all animals, when young, there is none more prettily playful than the kitten; but it loses this playfulness as it grows up, and the innate treachery of its kind then begins to prevail. Whatever animal is much weaker than themselves is to them an object of destruction. Birds, young rabbits, as well as rats and mice, are all equally pursued. The mouse however, is the cat's favourite

game. She will wait patiently near its hole till it appears, when she seizes it with a bound. Not content with having made sure of her victim, she will continue to torment it for a considerable time before she kills it outright.

The pupil of the cat's eye admits of a great degree of contraction and dilatation. In the daytime it is very small, but by night it expands over the whole surface of the eyeball; and by this means they see better in the dark than in the light, and are thus better able to discover and seize their prey. The cat is particularly afraid of water and cold; she loves to lie in the sunshine, and to get near the fire. She is extremely fond of some plants, such as valerian and cat-mint, against which she rubs herself, and at last completely destroys them.

The wild cat is larger than the tame one; its fur is longer, its head bigger and face flatter; the teeth and claws are much more formidable; the tail is very thick and flat, marked with alternate bars of black and white, and the end of it is always black. The general colour of these animals in England is a yellowish white, mixed with a deep grey. This animal is found in our large woods, and is the most destructive of the carnivorous kinds in this kingdom. It inhabits the most mountainous and woody parts of these islands, living chiefly in trees, and feeding only by night. This animal is common to the New Continent as well as to the Old. In Persia there is a kind of cat of the figure and form of the ordinary one, but much more beautiful in the lustre and colour of its hair. It is of a greyish blue, approaching to white, and is soft and shining as silk. The tail is very long, and covered with hair to the length of six inches.

THE DOG.

The dog is the most intelligent of all known quadrupeds, and the acknowledged friend of mankind. Independent of the beauty of his form, his vivacity, force, and swiftness, he is possessed of all those internal qualifications that can gain the affection of man. He lays his courage, and all his other useful qualities, at the feet of his master; he waits his orders, to which he pays implicit obedience; he consults his looks, and a single glance is sufficient to insure his obedience. Without the assistance of the dog, how would man have been able to conquer, tame, and reduce to servitude other animals? How could he discover, chase, and destroy those that are noxious to him? The flock and herd obey his voice more readily even than that of the shepherd or the herdsman; he conducts them, guards them, and keeps them out of danger. In short, the dog is the only animal whose fidelity is unshaken, the only one who knows his master and the friends of the family, and the only one who instantly distinguishes a stranger.

The varieties of this animal are very numerous; climate, food, and education have all a very great effect on him, and produce alterations in his shape, colour, hair, size—and, in a word, in everything but his nature and disposition.

THE SHEPHERD'S DOG.

The shepherd's dog may be considered as the primitive stock from whence the different varieties are derived. He has straight ears, long and thick hair, a savage aspect, and does not bark either so often or so loud as other dogs. Notwithstanding this creature's ill appearance, he is superior to all the rest of his kind in instinct, and, without any teaching, naturally takes to

tending flocks, with an assiduity and vigilance that at once astonishes and relieves his master.

THE BLOODHOUND.

The bloodhound was a dog of great use and in high esteem among our ancestors. He was employed to recover any game that had escaped from the hunter, or had been killed, and stolen out of the forest. But he was still more employed in hunting thieves by their footsteps. At that time, when the country was less populous than at present, and when, consequently, the footsteps of one man were less crossed and obliterated by those of others, this animal was very serviceable in such pursuits; but as the country is now everywhere peopled, their services are at present no longer required. Many surprising stories are told of their wonderful sagacity and power of scent.

THE GREYHOUND.

This is the swiftest of the dog kind, and continues the pursuit only by the eye. He can outstrip every other animal of the chase. He is supposed to be the Irish greyhound or wolf-dog, improved by climate and good training. By the forest laws of King Canute, no person under the degree of a gentleman was permitted to keep any dog of this kind. The Italian greyhound is of this species, and is in all respects similar in his appearance. Although not above half his size, he is inferior to none in the elegance of his form: but this country is too cold for his delicate consititution.

THE SPANIEL.

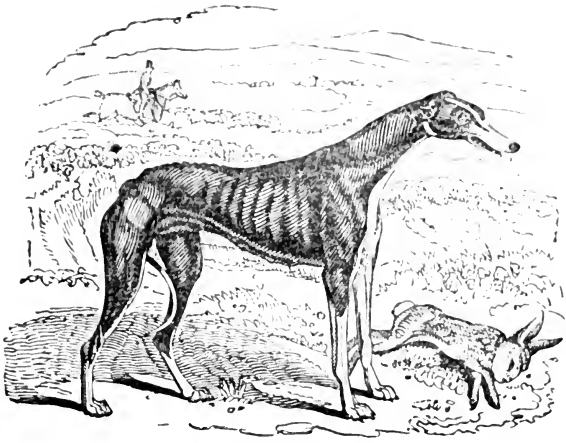
The spaniel probably had its name from Spain. The water-spaniel is the most docile of all the dog kind. Many other creatures will not bear correction; but this patient creature, though very fierce to strangers, seems unalterably attached to his master, and blows and ill-usage seem only to increase his love for him. He is used in setting for partridges, pheasants, quails, &c. His steadiness and caution in approaching his game, and his patience, are extremely remarkable.

THE MASTIFF.

The genuine breed of this kind, although not entirely lost, is now but seldom to be met with. The real breed is very large and much more powerful than the bull-dog; his ears are larger and more pendulous, his lips thick and hanging over his under jaw, his countenance sullen, and his bark peculiarly deep and terrifying. He is chiefly used in guarding houses, gardens, and property against thieves, especially in country places, where he is ever faithful to his trust, and will suffer no depredation to be committed on the property where he resides. Like a trusty watchman, he goes his rounds, and frequently barks to give notice that he is ready to defend the premises.

THE BULL-DOG.

The bull-dog is considered as the most courageous of all animals, and is extremely fierce. Although not the largest of his race, he is possessed of very great muscular strength, has a very short nose, a projecting under jaw, and a very savage appearance. He will not hesitate to attack any animal though double his strength



GREYHOUND. *Page* 11.

NEWFOUNDLAND DOG. *Page* 13.

and size; and his courage in seizing the bull, as well as his obstinacy in keeping his hold, are extremely surprising. Indeed, when he has obtained a proper hold, no effort that can be made will disengage him. This animal is now very rare; and it is much to be desired that it were totally extinct, as he is a most dangerous animal; and as he always attacks without barking, he should never be approached by a stranger without the utmost precaution.

THE POINTER.

The pointer, though originally of foreign extraction, may now be considered as naturalized in this country. He is a smooth, robust dog, with a strong thick muzzle. When they scent their game, they remain perfectly still. In this position they remain till the sportsman comes near enough to take his shot, when he gives the word, and the dog instantly springs the game.

THE NEWFOUNDLAND DOG.

This animal is of great size, measuring six feet from the tip of the nose to the extremity of the tail, and proportionable in its strength and thickness. Being web-footed, he is a dexterous swimmer, dives with great facility, and when anything falls to the bottom of the water, of a moderate weight, he brings it up with the greatest ease. By his superior strength and docility, he is of great use to the inhabitants of Newfoundland, in dragging wood from the interior to the sea-shore; for one of them can easily draw one hundred weight on a sledge for several miles; and when loaded, they go and return of their own accord; and so great is

their sagacity, that they have been known to rescue children and even men from a watery grave.

THE WOLF.

The wolf from the tip of the nose to the insertion of the tail is about three feet seven inches long, and about two feet five inches high. His colour is a mixture of black, brown, and grey hair, extremely rough and hard. The feature which particularly distinguishes the face of the wolf is the eye, which is placed slantingly upwards, nearly in the direction of the nose, whereas in the dog it opens more at right angles to the nose. The colour of the eyeballs in the wolf are of a fiery green, which gives his visage a fierce and formidable air.

The wolf is one of those animals whose appetite for animal food is most vehement, and whose means of satisfying this appetite are the most various. Nature has furnished him with strength, cunning, agility, and all those requisites which fit an animal for pursuing, overtaking, and conquering its prey. When pressed with hunger, he braves every danger, and attacks those animals which are under the protection of man, particularly sheep, lambs, and even dogs themselves, for no animal food comes amiss to him. Though the wolf so nearly resembles the dog in appearance, yet in his nature and disposition he is entirely different. In fact, no two animals have a greater antipathy for each other. They never meet without either fleeing or fighting—fighting for life and death, and without showing mercy on either side. Although very voracious, the wolf can support hunger for a long time, and often lives four or five days without food, provided he is supplied with water. Wolves have been seen following armies, and arriving in great numbers on the field of battle, where

they have devoured such dead bodies as were left upon the field. These animals formerly abounded in England: so much so that King Edgar attempted to rid the kingdom of them by commuting the punishment for certain crimes into receiving a certain number of wolves' heads from each criminal. They are now entirely extirpated in the British isles. This animal is met with in most parts of the world, being found in Asia, Africa, and America, as well as in Europe.

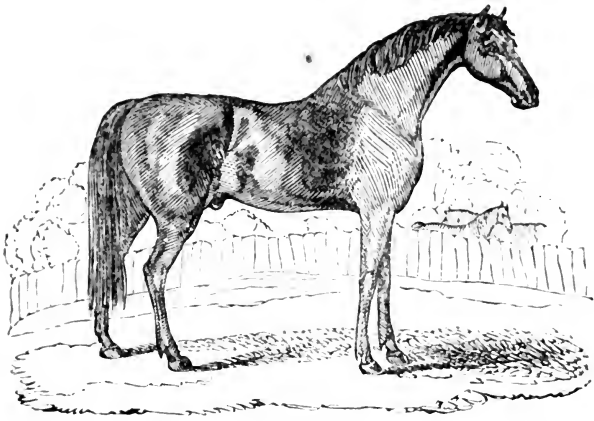
THE FOX.

The fox is of a more slender make than the wolf, and not near so large; the wolf being more than three feet and a half long, whereas the fox is not more than two feet three inches. The tail of the fox is also much longer in proportion, and more bushy; his nose is smaller, and approaches more nearly to that of the greyhound, and his hair is much softer. On the other hand, he differs from the dog in having his eyes obliquely placed, like those of the wolf. He differs still more from the dog in his strong offensive smell. The fox has always been famous for his cunning and his arts. Without attempting to oppose either the dogs or the shepherd, he gains by his address what is denied to his strength or courage. He makes for himself an asylum, to which he retires in case of necessity, and where he shelters himself from danger. His kennel is generally at the edge of a wood, and yet within an easy journey of some neighbouring cottage. From thence he listens to the crowing of the cock and the cackling of the fowls. If he is able to get into the poultry-yard, he begins by levelling all the fowls, and, carrying off a part of the spoil, he hides it at some convenient distance and returns for the rest, which he hides in like

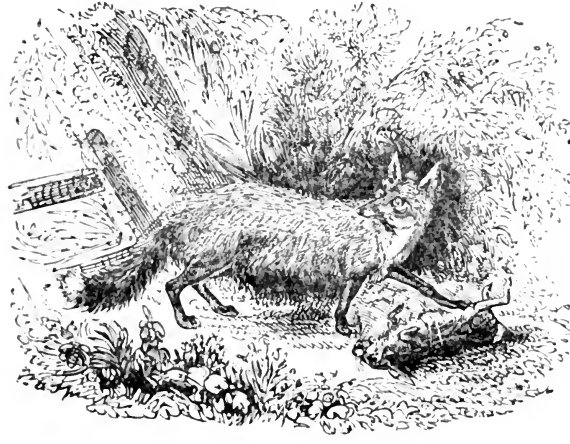
manner. The fox is usually hunted by a kind of large hound assisted by terriers. The instant he perceives himself pursued, he runs to his kennel, and takes refuge at the bottom of it. If he can be dug out of his kennel, he is carried in a bag to some open part of the country, and there let loose. His shifts to escape when all retreat to his kennel is cut off, are various and surprising. He flies before the hounds in a direct line, takes to low and marshy ground, where the scent is weaker, and at last, when overtaken, he fights desperately and defends himself to the last gasp. The general colour of foxes in this country is red, but in colder countries, they are met with of all colours. The common kind is met with in Europe, Asia, and America; they are very rare in Africa, and in the countries under the torrid zone.

THE JACKAL.

The jackal is of the size of a middling dog, resembling the fox in the hinder parts, particularly the tail, and the wolf in the fore parts, especially the nose. His legs are shorter than those of a fox, and his colour is of a bright yellow; and hence he has been sometimes called the golden wolf. The jackal is found all over Asia, and in most parts of Africa. His cry is a howl, mingled with barking. The jackal never goes alone, but always in a pack of forty or fifty together. They not only attack the living, but the dead also, scratching up with their feet the new-made graves, and devouring the corpse. They may be considered as the vulture of the quadruped kind; everything that once had animal life seems equally agreeable to them. As soon as the lion and other carnivorous animals hear the jackal's howl, they follow in silence at some distance behind;



HORSE. *Page* 18.



FOX. *Page* 15.

and just as the poor animal is going to enjoy the fruits of his labour, the lion or the leopard comes in and satiates himself with the spoil. It is for this reason that the jackal has been called the lion's provider.

THE HYÆNA.

The hyæna is about the size of the wolf, and has some similitude to that animal in the shape of his head and body. The legs, particularly the hinder ones, are longer than those of either the dog or the wolf, and different from all other quadrupeds in having but four toes, as well on the fore feet as on the hinder. His hair is of a dirty greyish colour, marked with black; the tail is short, with pretty long hair. His manner of holding his head is somewhat like a dog, pursuing the scent with his nose near the ground. The head being held thus low, the back appears elevated like that of the hog which, with a long bristly band of hair that runs all along, gives him a good deal the appearance of that animal.

No words can give an adequate idea of this animal's figure, deformity, and fierceness; more savage and untameable than most other quadrupeds, he seems to be always in a state of rage and rapacity, for ever growling, except when receiving his food. He is a filthy and solitary animal, found chiefly in the most desolate and uncultivated parts of the torrid zone. He is much stronger and more courageous than the wolf. He breaks open the sheepfolds by night, and ravages with insatiable voracity. When destitute of other provision he disturbs graves and feeds on the dead bodies. Many wonderful stories were related of this animal by the ancients, but modern discoveries have proved them to be false.

THE HORSE.

Of all quadrupeds, the horse seems the most beautiful; his noble size, the glossy smoothness of his skin, the graceful ease of his motions, the exact symmetry of his shape, fully justify us applying to him that epithet. In those extensive plains where the horses run wild, they are often seen feeding in droves of five or six hundred. As they do not carry on war against any race of animals, they are satisfied to remain entirely on the defensive. They have always one among their number that stands as sentinel, to give notice of any approaching danger, and this office they take by turns. On the approach of a man, their sentinel walks boldly up to him as if to intimidate him from proceeding, but if he still persist in advancing, the sentinel instantly gives the alarm by a loud kind of snorting, upon which they all take the signal and fly off with the speed of the wind, their faithful sentinel bringing up the rear.

But of all countries where the horse runs wild, Arabia produces the most beautiful breed. They are not, however, so large as those that are bred up tame; they are of a brown colour, their mane and tail very short, and the hair black and tufted. Their swiftness is so great that the attempt to pursue them with dogs would be entirely fruitless. The only method, therefore, of taking them is by traps, hidden in the sand, which, entangling their feet, the hunter comes up and seizes them. As the Arabians live in no other residence than a tent, this serves them also for a stable, so that the mare, the foal, the husband, the wife, and the children live together indiscriminately; the little children are often seen on the body of the mare, who suffers them to play with and caress her, without doing them the least injury. The Arabian horses are in general less in

stature than our own, being not above fourteen hands high, but their motions are much more graceful.

The race of Arabian horses has spread into Barbary, among the Moors, and has even extended across that extensive continent to the western shores of Africa. It has also spread into Egypt and into Persia, where it is said there are studs of thousands of white mares together. The Persian horses are in general the most beautiful and the most valuable of any in the East, the plains of that country supplying them with excellent pasture.

But of all the countries in the world, there is none in which the horse is brought to greater perfection for size, strength, swiftness, and beauty than in England. By the greatest care and most patient attention we have succeeded in improving the breed of this animal, so that English horses are capable of performing what no others have ever been able to attain to. An ordinary racer goes at the rate of a mile in two minutes, and one of the name of Childers was known to move eighty-two feet and a half in one second of time, or nearly a mile in a minute. Nor is it in swiftness only, but for every other useful purpose, the English horse is superior to that of every other country.

THE ASS.

Although this animal is very easily distinguished from the horse at first sight, yet upon closer inspection the similitude between them is very striking: they are, however, two distinct kinds, different in their natures. The ass is in his wild state swift, fierce, and formidable; but in his state of tameness he presents a very different picture; the moment his native liberty is repressed, he seems entirely to give up all claims to freedom; he suffers with patience all the ill-treatment that is in-

flicted on him. He is contented with the coarsest food, and makes his humble repast on what the horse and other animals have left behind. But though indifferent as to his food, he is very particular as to his water, drinking only at the clearest brooks.

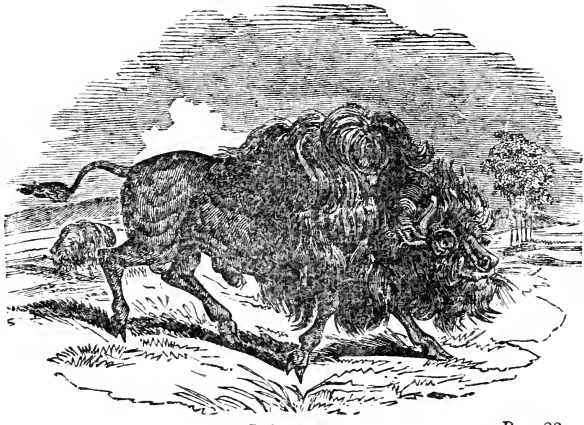
The ass, like the horse, was originally imported into America by the Spaniards, and afterwards by other nations. That country seems to have been peculiarly favourable to this race of animals; and where they have run wild they have multiplied in such numbers that in some places they are become a nuisance.

When overloaded, the ass shows how he feels the injustice of his master by hanging down his head and lowering his ears; when he is too hard pressed, he opens his mouth and draws back his lips in a very disagreeable manner. Though he sets out very freely at first, he soon grows tired, and then no beating will make him mend his pace. The ass is a much more hardy animal than the horse, and liable to fewer diseases. He is three or four years in coming to perfection; lives till twenty or twenty-five: he sleeps much less than the horse, and never lies down for that purpose unless very much tired.

THE MULE.

The mule is the offspring of the horse and the ass. He is very healthy, and will live above thirty years; he is very serviceable in carrying burdens, particularly in mountainous and stony places, where horses are not so sure-footed. Indeed, in some mountainous countries the inhabitants could not well do without them. When these animals come to the edge of the mountain they stop without being checked by the rider, and continue for some time immoveable. Having prepared themselves for the descent, they place their fore feet in a posture as if they were stopping themselves; they then

ZEBRA. *Page* 21



BUFFALO. *Page* 23.

put their hinder feet together as if they were going to lie down. Having thus as it were, taken a survey of the road, they slide down the descent with the swiftness of a meteor.

THE ZEBRA.

The zebra is chiefly a native of the southern parts of Africa, and there are whole herds of them often seen feeding in those extensive plains that lie towards the Cape of Good Hope. In shape the zebra rather resembles the mule than the horse or the ass, being rather less than the former, and yet larger than the latter. Its skin is smooth and glossy, and its form round and fleshy; but its greatest beauty lies in the regularity and elegance of its colours. In the male they are white and brown: in the female, white and black. These colours are disposed in alternate stripes over the whole body, and with the most perfect exactness and symmetry. These stripes, which appear like so many ribands, are laid over all its body, and are narrow, parallel, and exactly separated from each other.

Such is the beauty of this creature, that it seems by nature fitted to satisfy the pride and pleasure of man, and formed to be taken into his service. Hitherto, however, it appears to have disdained servitude, and neither force nor kindness have been able to subdue its native independence and ferocity.

These animals are often sent as presents to the princes of the East. It is said that one of the governors of Batavia gave a zebra, which had been sent to him from Africa, to the emperor of Japan, for which he received, as an equivalent, the enormous sum of sixty thousand crowns. It is very usual for the African ambassadors to the court of Constantinople to bring some of these animals with them as presents to the Grand Signior.

THE OX.

Of all animals that man has subdued, those of the ox kind are the most useful. The cow, indeed, is the poor man's riches and support, and he could less dispense with her services than with those of any other animal.

The climate and pasture of Great Britain are particularly adapted to animals of this kind; the verdure and fertility of our meadows are perfectly suited to its manner of feeding; and there is no part of Europe, nor perhaps in the whole world, where the tame animal grows larger, yields more milk, and more readily fattens, than with us.

This animal is not very choice in its herbage, but indiscriminately and hastily devours its food, of which it indeed requires a vast quantity. As nature has furnished it with an appetite for such coarse and simple food, so she has enlarged the capacity of the intestines to take in a larger supply. It requires a long and tedious process before grass can be changed into flesh, and nature has furnished animals of the ox kind with four stomachs, through which the food successively passes before its nutritious juices are completely extracted. The grass being slightly chewed, and two of the stomachs being filled with as much as they can contain, the food is, by a particular contrivance, brought up and chewed a second time; it then passes into the third stomach, where it receives a further preparation, and at length enters the fourth, where it undergoes a complete maceration, and is rendered fit to be converted into flesh. The cow's age may be determined from her horns. At three years old she sheds her horns, and new ones arise in their place, which continue as long as she lives. Every succeeding year a new ring is formed; and thus, allowing three years before their appearance, and then

reckoning the number of rings, we have the animal's age exactly.

The ox kind is found in almost every part of the world, large in proportion to the richness of its pasture, and small as the animal is stinted in its food. In Switzerland, for instance, where the mountains are covered with a rich, nourishing herbage, these animals grow to a large size. On the contrary, in France, where they get no other grass than what is considered unfit for horses, they dwindle and grow lean.

The Highland cattle, and those bred in the western isles of Scotland, are of a very diminutive size. Vast quantities of them are annually brought into England, and, after being fattened, their flesh is much esteemed.

THE BISON.

The bison, which is only a variety of the ox kind, differs from the rest, by having a lump between his shoulders. He has somewhat the look of a lion, with a long, shaggy mane, and a beard under his chin. His head is small, his eyes red and fiery, with a fierce look, and his horns very large. He is generally taken by pitfalls, as it is extremely dangerous to pursue him, except where there are trees large enough to conceal the hunters.

THE BUFFALO

The buffalo, though resembling the ox, is by no means so beautiful an animal; his figure is more clumsy and awkward, his air wilder, his body shorter and thicker, his head smaller, his horns black and compressed, with a bunch of curled hair hanging between them; his skin is harder and thicker, his flesh hard and blackish, and very disagreeable to the taste. The

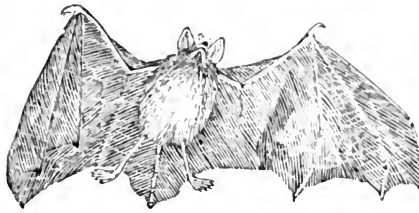
milk of the female, though very abundant, is by no means so good as that of the cow.

As these animals are in general larger and stronger than the ox, they are very useful for the purposes of agriculture, as well as for drawing burdens; two buffaloes, yoked in a waggon, can draw more than four strong horses. When used for these purposes, he has a brass ring put through his nose. The buffalo is a native of warm climates, and is found wild in many parts of India. Wild buffaloes are very dangerous animals, and are often found to gore travellers to death. These animals are also met with in several parts of Europe, particularly in Italy, where they constitute the food and riches of the poor.

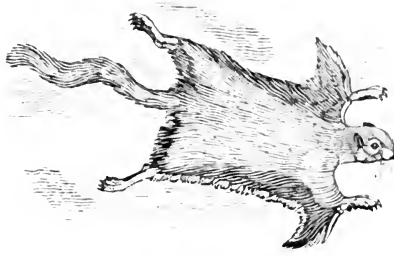
THE SHEEP.

The sheep, in its present domestic state, seems of all animals the most defenceless and inoffensive. In its wild state it is, however, a bold, fleet creature, able to escape from the greater animals by its swiftness, and to oppose the smaller kinds by the arms it has received from nature. The sheep, in its servile state, seems to be divested of all inclination of its own, and of all animals it has the most stupid air. It appears a large mass of flesh, supported upon four small, straight legs, ill fitted for carrying such a burden. Its motions are awkward, and it is easily fatigued, and often sinks under the weight of its own corpulency.

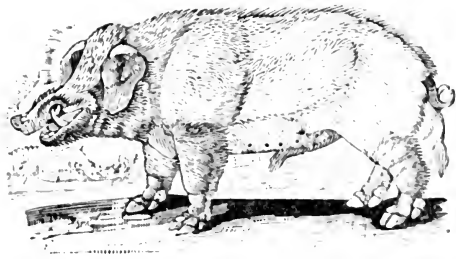
It does not appear, from early writers, that the sheep was bred in Britain; and it was not till several ages after this animal was attended to that the woollen manufacture was carried on among us, and we were obliged to import the cloth that was manufactured from our own materials. Many unavailing efforts were used to intro-



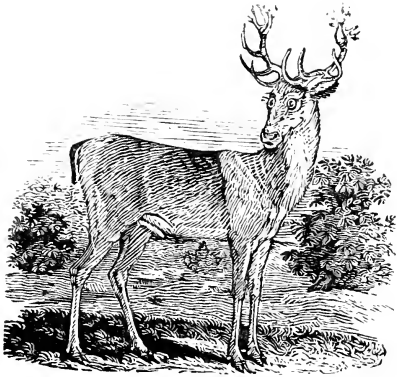
BAT *Page* 61



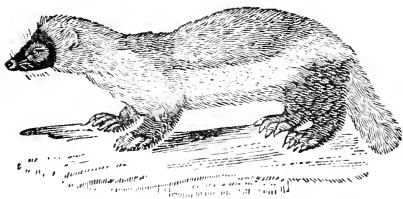
FLYING SQUIRREL *Page* 18



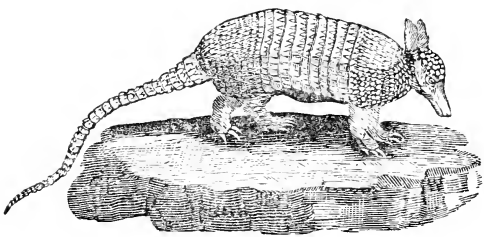
WILD BOAR *Page* 40



STAG *Page* 27



GLUTTON



NINE-BANDED ARMADILLO *Page* 60

duce the manufacture at home, but it was not till the time of Queen Elizabeth, when many of the natives of the Netherlands, being forced by the tyranny of Spain to take refuge in England, improved us in the woollen manufacture, in which we at present excel the rest of the world.

No country produces such sheep as England, or with larger fleeces, or better adapted for the purposes of clothing. Though those of Spain are finer, and some of their wool is generally required to work up with our own, the weight of a Spanish fleece is in no respect comparable to an English one.

The variety of sheep in their tame state is so great, that those of scarcely any two countries resemble each other, but there is a marked difference in all, either in size, wool, shape, or horns. The woolly sheep, as it is seen among us, is found only in Europe, and some of the temperate provinces of Asia. When transported into foreign countries it loses its wool, and assumes a covering fitted to the climate, becoming hairy and rough. A remarkable variety is the Iceland sheep, which differs from ours in the extraordinary number of its horns, having generally four, and sometimes eight, growing from different parts of the forehead. Its wool, also, is very different, being long, smooth, and hairy. A second variety is that of the broad-tailed sheep, so common in Tartary, Persia, Syria, and Egypt. This sheep is remarkable for its large and heavy tail, which is occasionally found to weigh twenty or thirty pounds. It sometimes grows a foot broad, and is obliged to be supported by a small kind of board that goes upon wheels.

The third variety is that of the sheep called *strepsicheros*. This animal is a native of the islands of the Archipelago, and only differs from our sheep in having straight horns, surrounded by a spiral furrow.

The last variety is that of the Guinea sheep, which is

generally found in all the tropical climates both of Africa and the East Indies. They are of a large size, with a rough, hairy skin, short horns, and ears hanging down, with a kind of dewlap under the chin. These, of all the domestic kinds, seem to approach the nearest to a state of nature, being larger, stronger, and swifter than the common race.

Within the last twenty years the wool obtained from the Australian sheep has formed a very important branch of commerce, an enormous amount of it having been annually imported into this country.

THE GOAT.

The Goat seems in every respect more fitted for a life of liberty than the sheep. It is consequently more lively, and possessed of more instinct than that animal. It is also stronger and swifter, more courageous, and more playful than the sheep; it is not easily confined to its flock, but loves to stray remote from the rest. It delights in climbing precipices and going to the very brink of danger, and is often seen suspended on an eminence overhanging the sea, and even sleeps there in security. It is a hardy animal and very easily sustained, and is, therefore, chiefly the property of the poor who have no pastures with which to supply it.

The milk of the goat is sweet, nourishing, and medicinal, not so apt to curdle on the stomach as that of the cow. One of the most remarkable varieties we find in the goat is in that of Natolia or Angora. The horns of this goat proceed horizontally from the head, and are twisted like a cork-screw. The hair is very long, thick, fine, and glossy. Nothing can exceed the beauty of the stuffs which are made from the hair of this goat, especially the shawls, which are of an extremely delicate texture, and are sold for high prices.

The *Ibex* resembles the goat in the shape of its body,

but differs from it in its horns, which are much longer They are bent backward, and are full of knots. This animal has a large black beard, is of a brown colour, with a thick warm coat of hair.

The *Chamois* is another variety of the goat kind, and is found only in rocky and mountainous places. It is an extremely agreeable and lively animal, and is about the size of the domestic goat. It is found in great plenty in Piedmont, Savoy, Switzerland, and Germany. They are peaceful, gentle creatures, and live together in flocks from four to even a hundred, dispersed on the crags of the mountains. This animal has two small horns, about six inches long, of a beautiful black colour, and projecting forwards. Hunting the chamois is very laborious and extremely difficult and dangerous; for the animal sometimes turns on its pursuer and frequently tumbles him over the neighbouring precipice.

THE STAG.

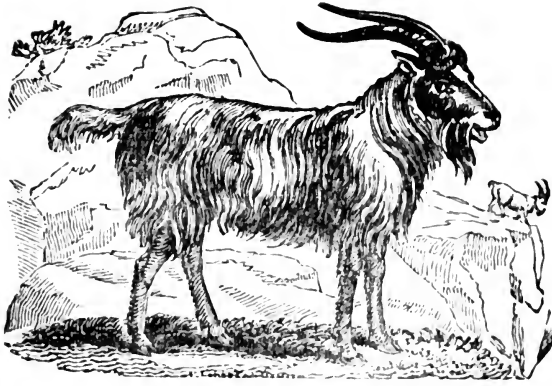
The stag or red deer is one of those peaceable and beautiful animals that seem made to embellish the forest. The easy elegance of his form, the lightness of his motions, his large branching horns that seem made rather for ornament than defence, his size, strength, and swiftness, rank him among the first of quadrupeds. The stag or hart, whose female is called a hind, and the young one a calf, differs in its size and horns from a fallow-deer. He is much larger, and his horns are round, whereas in the fallow-deer they are broad and palmated. The first year the stag has no horns; the next year the horns are single and straight; the third year they have two antlers, three the fourth, four the fifth, and five the sixth. These horns, large as they seem, are, however, shed every year, and new ones come in their place. The female is without the ornamen of horns.

Hunting the stag was ever considered one of the principal diversions of the great, and whole tracks of land were devoted for the purpose of breeding them. Sanguinary laws were made to preserve the game, and in the reigns of William II. and Henry I. it was considered less criminal to kill a human being than a beast of chase. When the stag is in the least alarmed he lifts his head and erects his ears, standing for a few minutes in a listening posture. He no sooner hears the hunters than he flies off with the speed of the wind, leaving his pursuers several miles behind him, and, no longer hearing the cries of the dogs and men, he stops and gazes around him. But he is soon compelled to renew his efforts, to escape from his pursuers. His strength now failing him, he is obliged to have recourse to art; he seeks refuge among the herd, and will sometimes put forward some little deer in his place; he will break into a thicket and rouse up the flock, endeavouring to put them in his track, but all in vain; for, knowing the situation in which he is, they shun him and leave him to his fate. When all other methods fail him he takes to the water, and attempts to escape by swimming over whatever stream he meets with, at the same time endeavouring to conceal himself by keeping all his body under the water except the tip of his nose. Every art being at length exhausted, he collects his remaining strength and boldly resists his enemies, and for some time stands at bay, and furiously aims at the first dog or man that attacks him, nor does he always die unrevenged; but the whole pack coming up he is soon surrounded and killed.

THE FALLOW DEER.

No two animals are more alike than the stag and fallow deer, yet none keep more distinct or avoid each

FALLOW DEER *Page* 23



GOAT. *Page.* 26

other with more fixed animosity. The fallow deer are but rarely found wild in forests, they are in general bred up in parks. This animal has the tail longer and the hair lighter than the stag. The male is termed a buck, the female a doe, and the young one a fawn. A herd of fallow deer is frequently seen to divide into two parties, and engage with each other to gain possession of some favourite spot of pasture in the park. These combats sometimes last for several days together, till the most feeble side is obliged to give way, and escape to the most disagreeable part of the park, for safety and protection.

The fallow deer is a beast of chase like the stag. When hard pressed, it takes to some covert with which it is acquainted; not, like the stag, flying before the hounds, nor crossing, nor doubling, nor using any of the arts which the stag does.

We have now in England two varieties of the fallow deer, the beautiful spotted kind, which is said to have been brought from Bengal; and the very deep brown sort, which was introduced from Norway. They have since multiplied in many parts of the kingdom, and England is now become more famous for its venison than any other country in the world.

THE ELK.

The elk is a native of both the old and new continents, being known in Europe under the name of elk, and in America, under that of moose-deer. It is extremely common in North America, but is become very scarce in Europe. In America the elk is about eleven feet high, but in Europe it scarcely ever exceeds eight feet. These animals delight in cold countries, feeding upon grass in summer, and on the bark of trees in winter. When the whole country is deeply covered

with snow, the moose-deer herd together under the tall pine trees, strip off the bark, and remain in that part of the forest while it affords them any subsistence. It is at that time that the Indians prepare to hunt them. The timorous animal no sooner perceives its enemies approach, than it immediately endeavours to escape, rushing through the snow, which in some places is four feet deep, and breaking down the trees which impede its course. The chase lasts in this manner for a whole day, and sometimes even longer. The poor animal, however, is at length overpowered, and the Indian coming up darts his lance at him and soon despatches him. This animal when killed is a very valuable acquisition to the hunters. The flesh is well-tasted and very nourishing. The hide is strong, and so thick that it has been known to turn a musket ball; when tanned. it is extremely light and lasting.

THE REIN-DEER.

Of all animals of the deer kind, the rein-deer is the most extraordinary and the most useful. It is a native of the icy regions of the north, and though several attempts have been made to introduce it into the warmer climates of the south, they have all failed; for it soons feels the influence of the change, and in a few months sickens and dies. It seems particularly adapted by nature to supply the wants of Laplanders and Greenlanders, and that hardy race of men who live near the pole. It answers the purpose of a horse, to convey them from place to place; that of a cow, in giving them milk, and that of a sheep, in furnishing them with a warm and comfortable clothing. It is no wonder then that so useful an animal is highly esteemed; and we find that some of the Lapland herdsmen

possess above a thousand of these animals in a single herd. The food upon which the rein-deer subsists is a kind of moss peculiar to that country. The Laplander early accustoms them to drawing the sledge, to which he yokes them by a strap, which goes round the neck, and comes down between their legs. The sledge is extremely light, and covered at the bottom with the skin of a young deer. The person who sits in this guides the animal with a cord, fastened round the horns, and encourages it to proceed with his voice, and drives it with a goad. These animals can travel with ease thirty miles a day, and when hard pushed will even trot fifty or sixty miles in that time. There is scarcely a part of this animal that is not converted to some particular use. As soon as it begins to grow old, it is killed, and the flesh dried in the air. During the winter the rein-deer are slaughtered, as sheep are with us; and every four persons in the family are allowed one rein-deer for their week's subsistence. The milk when newly taken is made into cheeses, which are well tasted. The skin of this animal is extremely valuable; of it the Laplanders form their strong snow shoes, as well as their garments, which are extremely warm and cover them all over. The horns are converted into glue; the sinews are dried and divided, so as to make the strongest sewing thread. The tongues, which are considered as a great delicacy, are dried and sold into the more southern countries. Thus the Laplander has all his wants amply supplied by this single animal.

THE CAMEL.

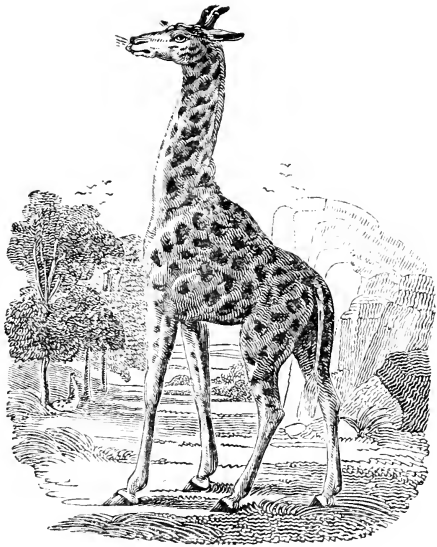
The camel is the most temperate of all animals: and it can continue to travel several days without drinking. In those vast deserts where the earth is every where dry

and sandy, where there are neither birds nor beasts, nor insects nor vegetables, where there is nothing to be seen but hills of sand and heaps of bones, there the camel travels, without requiring either drink or pasture, and frequently goes forward for six or seven days without any sustenance whatever. Its feet are formed for travelling upon sand, and are utterly unfit for moist or marshy places; the inhabitants, therefore, find a most useful assistance in this animal, where no other could subsist, and by its means cross those deserts with safety, which would be impassable by any other method of conveyance.

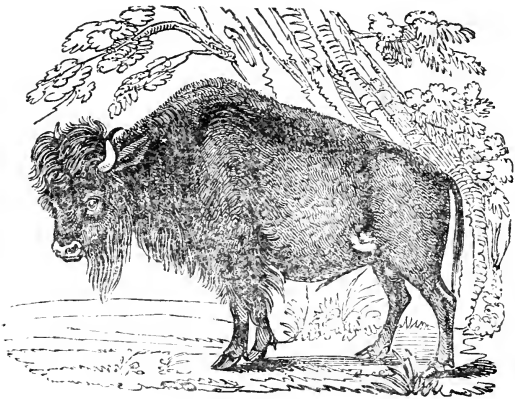
In Arabia the camel is considered as a sacred animal, without whose help the natives could neither subsist, traffic, nor travel; its milk makes a part of their nourishment, they feed upon its flesh, they clothe themselves with its hair, and if they fear an invading enemy, their camels serve them for flight, and in a single day they are known to travel above a hundred miles.

The camel is easily instructed in the method of taking up and supporting his burden; for this purpose, a few days after his birth, his legs are bent under him: in this position he is loaded and taught to rise: his burden is every day increased, and thus in time he is able to bear enormous weights, amounting to one thousand or twelve hundred pounds. The Arabs also early habituate these animals to bear hunger and thirst, by keeping them for a considerable time without food or water; and thus they are gradually inured to living five of six days without either.

Besides the four stomachs, which all animals have that chew the cud, the camel has a fifth, which serves as a reservoir to hold a greater quantity of water than the animal has an immediate use for. This is so wonderfully contrived that the water remains uncorrupted; and thus, when the animal is pressed with thirst, it



CAMELEOPARD. *Page* 33.



BISON. *Page* 32.

throws up a quantity of this water into the other stomachs, which serves to macerate its dry and simple food.

In Turkey in Asia, Persia, Arabia, Barbary and Egypt, the inhabitants carry on their whole commerce by means of camels. Merchants and travellers unite themselves in a body, furnished with camels to secure themselves from the attacks of the robbers that infest those countries. This assemblage is called a caravan, and sometimes amounts to upwards of ten thousand. In these trading journeys they travel but slowly, in general not more than thirty miles a day. Every evening, when they arrive at a stage, which is usually some verdant spot, where water and shrubs are in tolerable abundance, the camels are permitted to feed at liberty; when they eat as much in one hour as will serve them for the twenty-four.

The obedience and patience of this animal are very great. At the slightest sign it bends its knees and lies down, and suffers itself to be loaded in this position: at another sign it rises with its load, and the driver getting on its back, he encourages the animal to proceed with his voice and a kind of song.

The Dromedary is not a distinct species, but only a variety of the camel; the principal difference by which these animals are distinguished consists in this—that whereas the camel has two hunches on his back, the dromedary has but one; he is likewise neither so large nor so strong as the camel.

THE CAMELEOPARD.

The cameleopard, or, as it is frequently called, the giraffe, is a native of Africa. Its head somewhat resembles that of a deer, with two round horns near a

foot long; its neck is like that of a horse; its legs and feet are like those of a deer, excepting that the fore legs are nearly twice as long as the hinder. These animals have been met with nearly eighteen feet high, and ten feet from the ground to the top of the shoulder. The hinder part however is much lower, so that, when the animal is standing and at rest, it has somewhat the appearance of a dog sitting. Notwithstanding its great size, it is a very timorous animal; it lives entirely on vegetables, and when grazing is obliged to spread its fore feet very far asunder, in order to reach its food. It somewhat resembles a camel in its form, and being also spotted like a leopard, it has obtained the name of camelopard.

This animal was known to the ancients, but has very rarely been seen in Europe. When Rome was in its greatest splendour, Pompey exhibited at one time no fewer than ten of these animals upon the theatre. The flesh is said to be good and wholesome.

THE ELEPHANT.

The elephant, at first view, presents the spectator with an enormous mass of flesh that seems scarcely animated. Its huge body, covered with a callous hide and without hair; its large mis-shapen legs, that seem scarcely formed for motion; its little eyes, large ears, and long trunk, all give it an air of extreme stupidity. The elephant is frequently met with fourteen feet in height; its proboscis or trunk is about eight feet long and five feet and a half in circumference at the mouth; the body round and full; the back rising in an arch; and the whole animal short in proportion to its height: the tail is very short, and at the end of it there is a tuft of hair a foot and a half long.

Of all quadrupeds, the elephant is the strongest as well as the largest, and yet in a state of nature it is neither fierce nor formidable, and only uses its force for its own protection. In its native deserts it is seldom found alone, but appears to be a social, friendly creature. The oldest of the company conducts the band, the one next in seniority bringing up the rear; while the young, the weak, and the sickly, fall into the centre. Wherever they march, the forests seem to fall before them; in their passage, they bear down the branches on which they feed; and if they enter an inclosure, they destroy all the labours of the husbandman in a very short time.

In their natural state they delight to live along the sides of rivers, to keep in the deepest vales, and to refresh themselves in the most shady forests and watery places. Their food is entirely of the vegetable kind. As with their broad and heavy feet they sink deep wherever they go, they destroy much more than they devour, so that they are obliged frequently to change their quarters.

Under a very awkward appearance, the elephant possesses all the senses in great perfection. Though its eyes are so very small, yet its sight is extremely quick; nor is it less remarkable for its senses of smelling and hearing. But it is in the sense of touch that this animal excels all others of the brute creation. The organ of this sense lies chiefly in the trunk or proboscis; which is an instrument peculiar to this animal, and serves it for all the purposes of a hand. The trunk is, properly speaking, only the snout lengthened out to a great extent, hollow like a pipe, and ending in two openings, or nostrils like those of a hog. It is hollow all along, but with a partition running from one end of it to the other. It is capable of being moved in every direction, of being lengthened or shortened; so pliant as to embrace any body to which it is applied, and yet so strong that

nothing can be easily torn from its grasp. Through this trunk the animal breathes, drinks, and smells; at the extremity of it, just above the nostrils, there is an extension of the skin, about five inches long, in the form of a finger, and which in fact answers all the purposes of one. By means of this the elephant can untie the knots of a rope, unlock a door, and even pick up a pin.

But though the elephant is thus admirably supplied by means of its trunk, yet with respect to the rest of its conformation it is unwieldy and helpless. The neck is so short that it can scarcely turn the head, and it must wheel round in order to discover an enemy from behind. The legs are very stiff, and bend only with great difficulty. The feet, upon which these massy columns are supported, form a base scarcely broader than the legs they sustain. The sole of the foot is furnished with a skin as thick and hard as horn, which completely covers the underpart of it. The elephant is likewise supplied with two enormous tusks, which sometimes grow to the length of six feet. They are called ivory, and are applied to a variety of useful and ornamental purposes.

From time immemorial the elephant has been employed, either for the purposes of labour, war, or ostentation. He is a native of Asia and Africa, being found neither in Europe nor America. During the splendour of the Carthagenian empire, the elephants were employed in their wars against the Romans; but the Romans quickly learned the art of opening their ranks to admit the elephant, and thus separating it from assistance, quickly compelled its conductors to submit. Sometimes also the animal became impatient of control, and turned its strength against those forces it was employed to assist. Hence it very soon ceased to be used in war, as it required a great deal of preparation to very little purpose.

They are met with in great numbers beyond the river Senegal, nearly down to the Cape of Good Hope. But though these animals are most plentiful in Africa, it is in Asia that elephants of the largest size are found. Here they are sometimes met with to the height of fifteen feet. The largest are kept entirely for the service of princes, and are maintained with the utmost magnificence and at the greatest expense. The usual colour of the elephant is a dusky black, but some are said to be white, and the price of one of these is inestimable. Such a one is peculiarly appropriated for the monarch's own riding; he is kept in a palace, attended by nobles, and almost adored by the people.

The method of taking elephants is as follows :—A spot of ground is fixed upon, surrounded by strong palisades, made of the thickest and strongest trees, and strengthened by cross bars. The posts are fixed at such distances from each other that a man can easily pass between them; there being only one great passage left open, through which an elephant can easily come, and which is so contrived as to shut behind as soon as the animal has entered. To induce the animal to enter this inclosure a female is led into the forest, where she is obliged by her master to cry out for the male. No sooner does he hear her cry than he hastens to join her; she then retreats, and the male follows her till he enters the inclosure, which shuts the moment after. In the mean time the female proceeds, calling and inviting till the poor animal has entered so far into the inclosure, which gradually grows narrower, that he finds himself completely shut up and unable either to advance or retreat; the female elephant being in the mean time let out by a private way. The wild elephant, seeing himself thus entrapped, becomes extremely enraged; but the hunters approach, and, having fastened him by cords, attempt to soothe him by throwing buckets of water

upon him, rubbing his body with leaves, and pouring oil down his ears. When he is a little quieted, a tame elephant is brought forward, and who is trained to instruct the new comers. The hunters then open the inclosure, and while this creature leads the captive along, two more are joined on each side of it, and then compel it to submit. He is then tied by cords to a massy pillar, and suffered to remain a day and a night, till his anger has entirely ceased. The next day he begins to be somewhat submissive, and in a fortnight he is completely tamed like the rest.

At present, elephants are chiefly employed in carrying or drawing burdens, and no animal is better fitted for this service; for such is the strength of an elephant that he can draw with ease a load that six horses could scarcely move. He can travel without difficulty fifty or sixty miles a day, and when hard pressed nearly double that distance. The elephant lives upwards of one hundred and twenty years.

THE RHINOCEROS.

Next to the elephant, the rhinoceros is the most powerful of animals. It is usually twelve feet in length from the tip of the nose to the insertion of the tail, from six to seven feet high, and the circumference of its body nearly twelve feet. Few animals are so remarkably formed; its head is furnished with a horn growing from the snout, sometimes three feet and a half long; the upper lip is very long and pliable, and serves to collect its food; the ears are large, erect, and pointed; the eyes are small and piercing; the skin is naked, rough, knotty, and lying on the body in folds: it is of a dirty brown colour, and so thick as to turn the edge of a sword and to resist a musket-ball. There is

therefore no force which this animal has to fear; defended on every side by a thick horny hide, which the claws of the lion and tiger cannot penetrate, and armed with a weapon in front, which even the elephant will not venture to oppose. The rhinoceros which was shown at London in 1739 was brought from Bengal. It was fed with rice, sugar, and hay; it was daily supplied with seven pounds of rice mixed with three pounds of sugar; it was also supplied with great abundance of grass and hay; its drink was water, of which it took a great quantity. It was of a gentle disposition, and permitted itself to be handled by the visitors, never attempting to injure them. The rhinoceros is a native of the deserts of Asia and Africa, and is usually found in those extensive forests that are frequented by the elephant and lion. It is a peaceful animal, and, though every way fitted for war, never attacking any animal except in self-defence. It subsists entirely on vegetable food, and is particularly fond of the prickly branches of trees and thorny shrubs, which it would be dangerous for other animals to swallow.

THE HIPPOPOTAMUS.

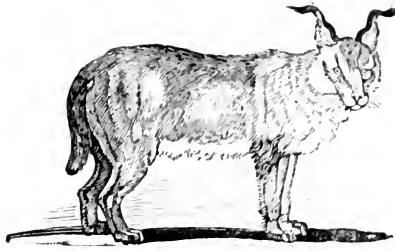
The hippopotamus is an animal larger and not less formidable than the rhinoceros, but its legs are shorter and its head rather more bulky. This terrible animal, which resides in the waters of the Nile, is no less than seventeen feet long from the extremity of the snout to the insertion of the tail, above sixteen feet in circumference round the body, and above seven feet high; the head is nearly four feet long, and above nine in circumference. The jaws open about two feet wide, and the cutting teeth, of which it has four in each jaw, are above a foot long. The whole figure of this animal is somewhat between that of an ox and a hog, and its cry is

somewhat between the bellowing of the one and the grunting of the other.

The hippopotamus chiefly resides at the bottom of the great rivers of Africa, where it seizes upon such fish as are forced down by the violence of the stream; it swims very swiftly, and can remain at the bottom for thirty or forty minutes without rising to take breath. It traverses the bottom as if walking on dry land, and makes terrible devastation where it finds plenty of prey. Sometimes, however, it is forced by famine up into cultivated grounds, where it commits dreadful havock among the plantations of the helpless natives, who see their possessions destroyed without daring to resist the invader. Their chief method is by lighting fires, beating drums, and raising a cry to frighten it back to the water, and as it is very timid on land they generally succeed in their endeavours. This creature, which was formerly so abundant at the mouth of the Nile, is now wholly unknown in Lower Egypt, and is nowhere to be found in that river, except beyond the cataracts.

THE WILD BOAR.

The wild boar is much smaller than the tame hog, and does not vary in his colour as those of the domestic kinds do, but is always found of an iron grey, inclining to black; his snout is much longer than that of the tame hog, and his ears are shorter, rounder, and of a black colour. The tusks, also, of this animal are larger than in the tame breed; some of them being found to be almost a foot long. When the wild boar has arrived at maturity, being then conscious of his own superior strength, he walks the forest alone and fearless. Hunting the wild boar is one of the principal



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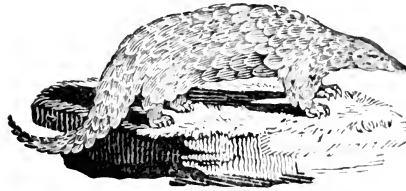
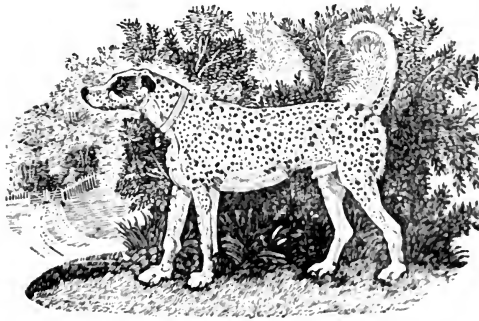
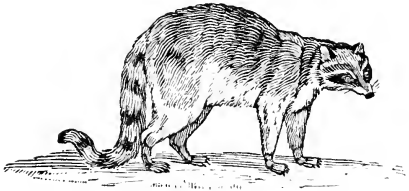


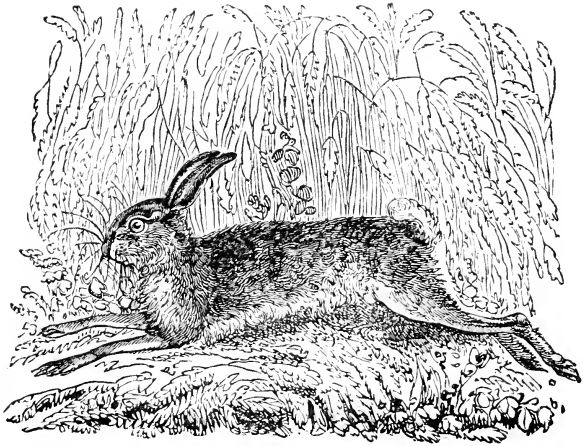
PANGOLIN, OR, SCALY LIZARD



DALMATIAN DOG



RACOON *Page 43*



HARE *Page 58*

amusements of the nobility in the countries where he is found. When driven from his covert, he goes slowly and uniformly forward, not much afraid, nor very far from his pursuers. At the end of every half mile, or thereabouts, he turns round, stops till the hounds come up, and offers to attack them. They, on the other hand, knowing their danger, keep off, and bay him at a distance. The boar then slowly renews his course, and the dogs continue the pursuit. Thus the chase is continued till the boar is quite tired and refuses to go any farther. The young and inexperienced dogs are generally the first to attack him, and generally pay for their temerity with their lives. Those that are older and better trained wait till the hunters come up, who attack him with their spears, and after several blows despatch him.

The wild boar was formerly a native of our country; and such as were convicted of killing the wild boar in the royal forests, were, by the laws of William the Conqueror, punished with the loss of their eyes.

THE HOG.

The hog by nature stupid, inactive, and drowsy; if undisturbed, it would sleep half its time: but it is frequently awakened by the calls of appetite, and when these are satisfied it goes to rest again. Its whole life is thus made up of sleep and gluttony; and, if supplied with sufficient food, it becomes an insupportable burden to itself, but will still continue to eat kneeling and even lying down. When the wind blows with any degree of violence the hog is greatly agitated, and runs violently to its sty, screaming horribly. It appears also to foresee the approach of bad weather, bringing straw to its sty in its mouth, preparing itself a bed, and hiding

itself from the impending storm. A sow generally produces from ten to fifteen at a litter, and that twice a year; and as the hog lives about eighteen or twenty years, they would, if not diminished by man, in a short time overrun the whole country.

This animal is a native of almost every region. That which we call the East India breed is lower, and is usually black, and has the belly almost touching the ground. It is now common in England; it fattens more easily than the ordinary kind, and makes better bacon.

THE BEAR.

There are three different kinds of bear: the brown bear of the Alps; the black bear of North America; and the Greenland or white bear. Though different in their forms, these are probably of the same original, the variations in their shape being doubtless occasioned by food and climate.

The brown bear is a savage and solitary animal, living in the most dangerous precipices of uninhabited mountains, or in the hollow of some old enormous tree. Here it retires alone during the winter, and remains, in an almost dormant state, for forty or fifty days, without provisions; subsisting, as it were, on the superabundance of its fat.

The black bear is very common in Canada. These animals make their dens in trees that are hollow towards the top. They are taken by setting fire to their retreats, which are often above thirty feet from the ground. Their paws are said to be a great delicacy, and their hams are well known at the tables of the luxurious.

The white or Greenland bear differs greatly, both

in figure and dimensions, from the brown and the black bear, growing to three times the size. The white bear seems to be the only animal that, by being placed in a cold climate, grows larger than those that live in a more temperate region. The white bear is indeed the undisputed master of the icy mountains in Spitzbergen and Greenland.

As this animal lives chiefly upon fish, seals, and dead whales, it seldom removes far from shore; but when forced by hunger it often ventures into the sea, swims after seals, and devours whatever it can seize.

THE BADGER.

The badger is about two feet six inches long from the nose to the insertion of the tail. The hair is long, and of rusty black colour. He is a solitary and stupid animal, avoiding the light, and only stealing out of his hole by night in quest of food. He very easily burrows in the ground, his legs being short and strong, and his claws stiff and horny. When he is surprised by the dogs at some distance from his hole, he fights with desperate resolution, and seldom dies unrevenged. The badger sleeps the greatest part of his time, and during the winter he still continues fat, though he takes but very little sustenance. The young ones when taken are easily tamed, but the old ones still continue savage and incorrigible.

THE TAPIR.

This animal has a long snout, which it lengthens or contracts at pleasure. The ears are long and pendant; its tail and neck are short, and its claws strong and firm; its skin is thick and covered with brown hair

and shields are made of it, which are proof against an arrow. This animal resides chiefly in the water, but differs from other amphibious animals in feeding entirely on vegetables. Its flesh is considered a great delicacy.

THE OPOSSUM.

The opossum is found in both North and South America, and is of the size of a cat. The head resembles that of a fox; the eyes are little and sparkling; the ears are long, broad, and transparent, like those of the rat kind; the tail also resembles that of a rat; the fore legs are about three inches long, and the hind ones about four. But what distinguishes this animal from all others is the pouch under the belly, into which the young animals creep and remain for some days after their birth.

The opossum, when on the ground, is a slow helpless animal, running very slowly; but, on the other hand, it can climb trees with great ease and expedition. It lives chiefly on birds, and hides among the leaves of the trees to seize them by surprise. It often hangs by the tail, which is long and muscular, and in this situation, for hours together, with its head downwards, it watches for its prey. If any small animal which it is able to overcome passes underneath, it drops upon it and quickly devours it. By means of its tail, it also swings from one tree to another, hunts insects, and escapes from its pursuers.

THE JERBOA.

The jerboa is not above the size of a large rat, its head somewhat resembles that of a rabbit; the teeth ear formed like those of the rat kind: it has a very long

tail, tufted at the end; the head, back, and sides are covered with long ash-coloured soft hair; the fore legs are not more than an inch long, with four claws and a thumb on each, while the hinder legs are two inches and a quarter long, and exactly resemble those of a bird, there being but three toes, the middlemost of which is longest. Its hind legs alone are used in running, while the fore paws, like those of the squirrel, grasp its food, and in some measure perform the office of hands. It is extremely swift, jumping six or eight feet at every bound. It is a lively, harmless animal, living entirely on vegetables, and burrowing in the ground like a rabbit. It is a provident little creature, and lays up for the winter; it eats grass, and when it is dried it carries it into its burrow to serve it for food, or to keep its young warm during the rigours of winter.

THE KANGAROO.

The kangaroo is a native of Australia, and was first discovered by Sir Joseph Banks. It greatly resembles the jerboa, but is much larger, the largest jerboa not exceeding the size of a large rat, whereas the kangaroo is as large as a small sheep. The head, neck, and shoulders are very small in proportion to the other parts of the body; the tail is nearly as long as the whole body, tapering towards the end; the skin is covered with a short fur, except the head and ears, which bear a slight resemblance to those of the hare. It is furnished with a pouch.

It moves precisely in the same manner as the jerboa, taking bounds of ten or twelve feet at a time, and thus sometimes escaping the fleetest greyhound. The flesh of the young animal is considered good food, but that of the older ones is much inferior.

THE RACOON.

This animal, which is by some called the Jamaica rat, is about the size of a small badger; the fur is fine, long and thick, and blackish; the nose is rather shorter and more pointed than that of the fox; the eyes larger and yellow; the tail thick, but tapering to a point, and regularly marked with rings of black. Like the squirrel it makes use of its paws to hold its food while eating. This animal is a native of America, and has not been met with in the old continent. It is found in great abundance in Jamaica, where it commits great depredations on the sugar plantations. Though so very destructive in a wild state, when tamed these animals are very harmless and amusing, and may be taught to perform a variety of entertaining tricks.

THE ANT-EATER.

There are several varieties of the ant-eater: the largest is about four feet long from the snout to the insertion of the tail, the second is not above eighteen inches long, and the third is not above seven inches long from the tip of the snout to the insertion of the tail; but though they vary so greatly in size, they all resemble each other in one respect, which is the extreme slenderness of their snout and the very great length of their tongue. This animal is a native only of the new continent, being entirely unknown to the old. It lives chiefly in woods, and hides itself among fallen leaves. Its manner of procuring its prey is one of the most singular in all natural history. When this animal approaches an ant-hill, it creeps forward, keeping itself concealed till it comes to the place where it intends to take its prey; it then thrusts out its round red tongue,

which is often two feet long, across the path of these busy insects, and there allows it to lie motionless for several minutes. The ants taking it to be a piece of flesh, come forth and swarm upon it in great numbers; but wherever they touch they stick, the tongue being covered with a slimy fluid which completely prevents them from escaping. When the ant-eater has thus a sufficient number on his tongue, he instatly draws it in, and devours them all in a moment; he repeats the same stratagem till his hunger is appeased, when he retires again to his hiding-place.

THE SLOTH.

The sloth is about the size of the badger: its fur is very coarse, resembling dried grass; the tail is very short; and the mouth extends from ear to ear. The legs are so extremely short, that a few yards is often the journey of a week. In fact, this animal seldom changes its place but by constraint, and when impelled by the severest pangs of hunger. It climbs trees, which it generally strips of their verdure in less than a fortnight. Having entirely destroyed the tree, and being unable to descend, it falls to the ground, where it remains for some time stunned with the fall. Having at length recovered from the shock, it proceeds to some neighbouring tree, to which it moves with inconceivable slowness, and often baits by the way—all its motions seem to torture it; every step it takes gives it pain, and forces it to utter a plaintive, melancholy cry.

THE SQUIRREL.

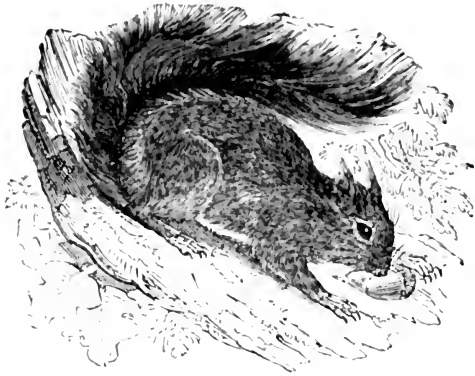
The squirrel is about the size of a small rabbit, and of a reddish brown colour; the belly and breast are

white, and the ears beautifully ornamented with long tufts of hair; the eyes are large, black, and lively; the tail is extremely long, beautiful, and bushy, and, when erected, it serves to protect the animal from heat and cold. The squirrel is met with in most parts of the world; its usual food is fruits, nuts, and acorns. It generally sits up on its hind legs, and uses its fore paws as hands. During the autumn it lays up a plentiful supply of food for the ensuing winter. Its nest is generally formed among the large branches of a tree, where they begin to fork off into smaller ones. The nest has a very small opening above, and is very commodious and warm. Its usual way of moving is by bounds; these it takes, from one tree to another, at forty feet distance; and if at any time it is obliged to descend, it runs up the side of the next tree with great facility.

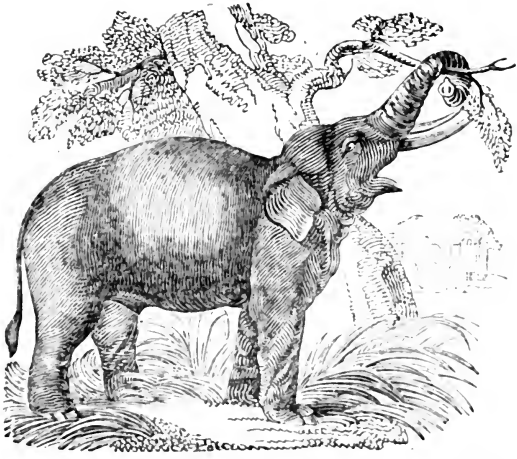
What is called the *Flying Squirrel* differs from the common squirrel in being much smaller, and in being furnished with a membrane which enables it to take leaps of above a hundred yards from tree to tree, so that in taking these leaps it has somewhat the appearance of flying.

THE MARMOT.

The marmot is nearly as large as a hare, but has shorter legs. Its head somewhat resembles that of a hare, except that the ears are much shorter. It is chiefly a native of the Alps; and when taken young is more easily tamed than any other wild animal. It is readily taught to perform a variety of tricks, and is very obedient to its master. These animals eat whatever is given to them; flesh, bread, fruits, herbs, and insects: they are however particularly fond of milk



SQUIRREL *Page* 17



ELEPHANT. *Page* 31.

and butter. The marmot sleeps during one half of the year; it begins to fit up its winter abode at the end of September, from which it is never seen to issue till the beginning of April. This animal's retreat is a hole on the side of a mountain, extremely deep, with spacious apartments at the bottom. In this retreat several marmots live together without crowding or incommoding each other. Whenever they venture abroad, they place one of their company as a sentinel, who sits on a lofty rock, while the rest amuse themselves in sporting about the fields. Whenever a man, or dog, or bird of prey approaches, their trusty sentinel gives the alarm by a kind of whistle, whereupon they all make for home, their trusty sentinel bringing up the rear.

THE GUINEA PIG.

The guinea pig is a native of the warmer climates; but it has been so long rendered domestic, and so widely diffused, that it has now become common in every part of the world. It is less than a rabbit, and its legs are shorter; the neck is so short that the head seems stuck on the shoulders; the hair is like that of a sucking pig, from whence it has taken its name. It is entirely destitute of a tail. Some of these animals are white, some are red, and others both red and white. They are fond of the darkest recesses and the most intricate retreats, where, if hay be spread for them, they will continue to sleep, unless they are disturbed. They are very cleanly animals, spending the greater part of their time in smoothing their hair and improving its gloss. They sleep, like the hare, with their eyes half open: the male and female are never seen to sleep at the same time; but, while he enjoys his repose, she re-

mains on the watch. When she supposes that he has had his turn, she awakes him with a kind of murmuring noise, goes to him and forces him from his bed and lies down in his place. He then performs the same good turn for her, and continues watching till she has done sleeping.

THE RAT.

The great rat, or, as it is sometimes called, the Norway rat, is about nine inches long; its eyes are large and black; the colour of the head, and the whole upper part of the body, is of a light brown mixed with a tawny ash colour. It burrows in the banks of rivers, ponds, and ditches; and every year it does incredible damage to those mounds that are raised to keep in the water. Here it resides during the summer, living on small animals, fish, and corn; but, at the approach of winter, it comes nearer farm-houses, burrows in the corn-stacks, and does great injury to them. These animals are extremely prolific; but, as they destroy and eat each other, their numbers are kept within bounds.

The black rat, which was formerly very common in this country, has been nearly extirpated by the great rat. It is about seven inches long, of a deep iron grey bordering on black, except the belly, which is of ash colour. They have propagated in great numbers in America, into which country they were introduced from Europe, and are now become extremely troublesome there.

The black water-rat is about the same size as the latter, but it has a larger head, a blunter nose, smaller eyes, and shorter ears. It never frequents houses; but chiefly inhabits ditches and ponds, living on fish, frogs, and insects.

THE MOUSE.

The mouse is one of the most timid of quadrupeds; to its timidity it indeed owes its security, for no animal has more enemies; the owl, the cat, the weasel, and the rat destroying it in vast numbers.

The long-tailed field mouse is larger than the common mouse, and is chiefly found in fields and gardens, where it is very destructive. These animals are remarkable for laying up provision against winter.

The harvest mouse is an exceedingly diminutive creature, not more than two inches and a quarter in length, and does not exceed one sixth of an ounce in weight.

THE DORMOUSE.

The dormouse inhabits the woods or very thick hedges, forming its nest in the hollow of some tree. Towards the approach of winter it forms a little magazine of nuts, beans, or acorns, and then shuts itself up till the warm weather returns. As soon as it feels the first attacks of the cold it rolls itself up into a ball, and continues to sleep for about five months of the year, seldom venturing from its retreat.

THE MOLE.

This animal differs greatly from every other quadruped. It has a coat of fine, short, glossy black hair. Its nose is long and pointed, resembling that of a hog. Its eyes are so small that it is scarcely possible to discern them. Instead of ears, it has only holes in their place. Its neck is so short that the head seems stuck upon the shoulders. The body is thick and round, terminating with a very short tail; and its legs,

instantly climbs a tree, and continues there till it has wearied out the patience of its adversary.

THE WEASEL.

The weasel species are of a lengthened form, with a sharp visage, short feet, and long tail. Besides birds and rabbits, they feed on vermin of all kinds, not sparing even rats and mice. Weasel skins constitute an article of commerce.

The common weasel measures about seven inches, of which the tail is about two inches and a half. Its body is of a light brown colour, and the belly white. This animal is found chiefly in the temperate regions of Europe, Asia, and America. It is a very active and cunning little animal, and is very destructive in granaries and barns, and commits great havock among poultry and rabbits. As they are able to ascend trees and walls with great facility, they are very successful in the pursuit of their prey. They generally sleep during the day, and sally forth on their predatory incursions during the night. The female produces, in the spring, four or five at a litter. This animal is very difficult to tame, and that only when it is young.

THE MARTIN.

This beautiful little animal is a native of Great Britain and many other parts of Europe. Its tail is bushy, its eyes very lively, its body rather black, and its throat white. It lives chiefly in fields and woods, where it subsists on eggs, birds, and the smaller species of animals. It has a musky smell, which is very intolerable to the dogs who pursue it. When taken young,

it may be rendered tame. The martin breeds in the hollow of a tree, or in the cleft of a rock, and produces from three to seven young ones at a birth. Notwithstanding its strong and disagreeable flavour, the flesh of this animal is, in some countries, used for food. The fur is very serviceable for the trimming of robes.

THE ERMINE.

The ermine resembles the weasel in form, but is rather larger, being about nine inches long. The tail of the ermine is always tipped with black, and well furnished with hair. The fur of this animal is the most valuable of any hitherto known; but it is in winter only that it is hunted, the fur being then white and thick, whereas, in the summer, it is brown and thin. In the north of Europe and Siberia, the skins of the ermine make a valuable article of commerce. These creatures are generally taken in traps baited with flesh.

THE FERRET.

The ferret is about twelve inches long, and resembles the weasel in the slenderness of its body and the shortness of its legs. It is commonly of a cream colour, but it is met with of all the colours of the weasel kind—white, blackish, brown, and party-coloured. Those that are of the whitish kind have their eyes red, which is generally the case with animals that are entirely of that colour. The ferret is chiefly used to drive rabbits out of their warrens into nets prepared for them at the mouth. For this purpose the ferret is muzzled, otherwise, instead of driving out the rabbit, it would content itself with killing it and sucking its blood at the bottom

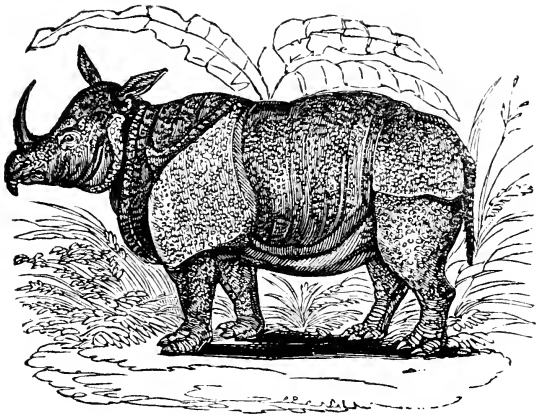
of the hole; but being thus unable to seize its prey, the rabbit escapes from its claws, and instantly makes to the mouth of the hole, where it becomes inextricably entangled in the net placed to surprise it.

THE POLE-CAT.

The pole-cat is about one foot five inches long; it very much resembles the ferret, but is longer and stronger; it is of a deep chocolate colour; the ears are short, rounded, and tipped with white. It is very destructive to young game of all kinds, but the rabbit seems to be its favourite prey; a single pole-cat is sufficient to destroy a whole warren, for with that insatiable thirst for blood which is natural to all the weasel tribe, it kills many more than it can devour. The pole-cat is also particularly destructive among pigeons; without making so much noise as the weasel, it does a great deal more mischief; it despatches each pigeon with a single wound in the head, and after killing a great number, and satiating itself with their blood, it then sets about carrying them away. Of all the animals of the weasel kind, this has the most disagreeable smell.

THE SABLE.

Of all the weasel kind, the skin of the sable is the most sought after. It is of a brownish-black, and the darker it is the more valuable it is considered. They the chiefly hunted in the winter for their skins, when the fur is the most abundant. They are mostly found in Siberia, there being but very few in any other country. The hunting of the sable chiefly falls to the



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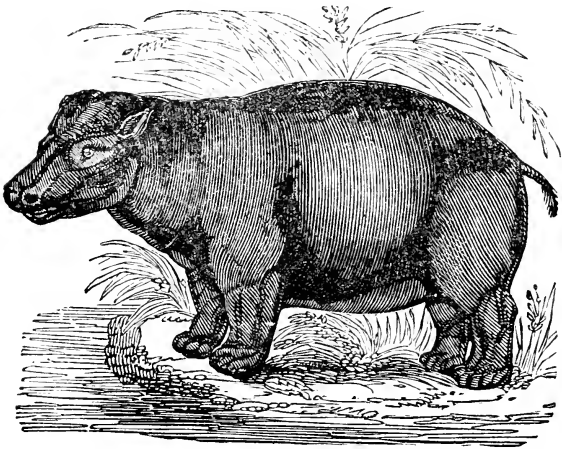

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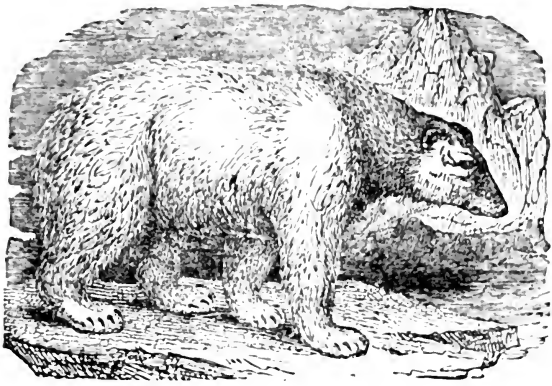
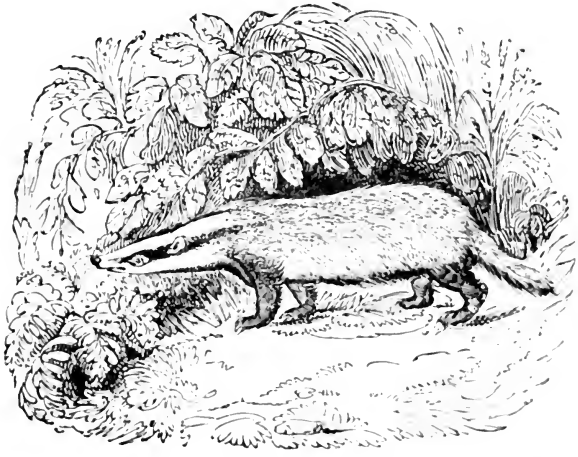


WHITE BEAR *Page* 43



BADGER *Page* 15

lot of the condemned criminals who are banished into these wild and inhospitable districts, where, for the greatest part of the year, the ground is covered with snow. These exiles are obliged to furnish a certain number of skins every year, and are punished if they do not supply the proper quantity.

THE ICHNEUMON.

The ichneumon is one of the boldest and most useful animals of all the weasel kind. In Egypt, where it is chiefly bred, it is used for the same purposes that cats are in Europe. This animal is about eighteen inches long, and the tail is ten more. The ichneumon is particularly serviceable to the Egyptians, in discovering and destroying the eggs of the crocodile. It also kills the young ones that have not yet been able to reach the water. This animal was one of those formerly worshipped by the Egyptians, who considered everything that was serviceable to them as an emanation of the Deity. Indeed, if we consider the number of eggs which the crocodile lays in the sand at a time, which often amounts to three or four hundred, we shall have reason to admire this little animal's usefulness as well as industry in destroying them.

THE CIVET.

The civet resembles animals of the weasel kind in the slenderness of its body, the shortness of its legs, and the softness of its fur: it differs from them in being much larger; in having the nose sharpened so as to resemble that of a fox; and its tail long, and tapering to

a point. The pouch or bag, which contains the perfume called civet, is situate near the tail; it is about two inches and a half broad and two long. Those who make it their business to breed these animals for their perfume, usually take it from them two or three times a week. The person who is employed for that purpose drags the animal backwards by the tail, and with a wooden spoon takes the civet from the pouch as carefully as he can. The quantity which a single animal affords generally depends on the kind of food it receives. It gives more in proportion as it is well fed. Raw flesh cut small, eggs, rice, birds, young fowls, and particularly fish, are the kind of food most grateful to it. The perfume of the civet is so strong that it is impossible for a person, shut up with one of them in a close room, to bear it. Civet has some resemblance to musk, but is much more agreeable.

THE HARE.

Of all animals, the hare is the most timorous; all its muscles are formed for swiftness, and to enable it to flee. It has very large prominent eyes, placed backward in its head, so that it can almost see behind it as it runs. As this animal is continually on the watch, it sleeps with its eyes open. The ears are very large; they are moveable, and can be directed to every quarter. Hares feed by night rather than by day. They live upon roots, leaves, fruits, and corn; they also strip off the bark of trees during the winter, and are particularly fond of birch, pinks, and parsley. They sleep in their forms by day, and may almost be said to live only by night. The hare easily outstrips all other animals at first; but as it exhausts its strength at the begin-

ning, and doubles back to the place it was started from, it is easily taken. The colour of the hare is generally brown, but in the arctic regions they become white in winter. This animal is found in most parts of the world, from the torrid zone to the polar circle. The flesh of the hare, though esteemed a luxury by most persons, is prohibited among the Jews and Mohammedans. The ancient Britons also considered it as an unclean animal. The fur of the hare forms a considerable article in the hat manufacture; and, accordingly, vast quantities of it are imported from those countries where the hare abounds.

THE RABBIT.

The hare and rabbit, though so very nearly resembling each other, are yet totally distinct kinds. Rabbits are extremely prolific animals. They breed seven times a year, and have about eight young ones each time; and thus in a short time they would overstock the globe, were it not that their enemies are numerous in proportion to their fecundity. In their natural state they make holes under the ground, to which they flee in case of danger. Rabbits of the domestic breed, like all other animals that are under the protection of man, are of various colours—white, brown, black, and variegated; wild rabbits, on the contrary, are generally brown. Rabbits love a warm climate, and are incapable of bearing the cold of the north. The English counties that are most noted for these animals, are Lincolnshire, Norfolk, and Cambridgeshire. Tame rabbits are larger than wild ones, but their flesh is not so good, being softer and more insipid. The fur is employed for several purposes, as well when the skin is dressed with it on, as when it is pulled off. The Syrian rabbit, like all

other animals bred in that country, is remarkable for the length of its hair: it falls along the sides in wreaths, and is sometimes curled at the end like wool.

THE ARMADILLO.

The armadillo is chiefly an inhabitant of South America; it is a peaceful, harmless creature, incapable of offending any other quadruped, and furnished with a peculiar covering for its own defence. This covering is a kind of shell divided into several pieces, that lap over each other like the plaits in a coat of armour, or in the tail of a lobster; the conformation of which affords one of the most striking curiosities in natural history. This shell covers the head, the neck, the back, the sides, and the tail to the very point. The only parts to which it does not extend are the throat, the breast, and the belly, which are covered with a soft white skin, somewhat resembling that of a fowl stripped of its feathers. The shell of the armadillo differs from that of the tortoise, in being composed of more pieces than one, and which slide over each other; by which means the animal has a motion in his back, and the armour yields so as to enable the animal to perform its various functions. The instant the armadillo perceives itself to be attacked, it withdraws its head under the shell, and lets nothing be seen but the tip of the nose; it then tucks its feet up under its belly, unites its two extremities together, and thus becomes like a ball, a little flattish on each side. In this situation it is perfectly secure against the attacks of every animal. These creatures are natives only of America, and were utterly unknown before the discovery of that continent.

THE BAT.

The bat most common in England is about the size of a mouse, or nearly two inches and a half long. The membranes that are usually called wings are, properly speaking, an extension of the skin all round the body, except the head, which, when the animal flies, is kept stretched on every side by the four inferior toes of the fore feet, which are very long, and serve like booms of a ship, that keep the canvas of a sail spread and regulate its motions. The body is covered with a short fur of a mouse-colour, tinged with red. The eyes are very small, and the ears like those of a mouse. The bat makes its first appearance early in the summer, and begins its flight in the dusk of the evening. It principally frequents the sides of woods and shady places, and is frequently observed to skim along the surface of pieces of water: its food consists of gnats, moths, and nocturnal insects of every kind. This little animal, even in summer, sleeps the greatest part of its time, never venturing out by daylight.

Of foreign bats, the largest we have any account of is the great bat of Madagascar. This formidable creature is nearly four feet broad, when the wings are extended, and a foot long from the tip of the nose to the insertion of the tail; its colour is red like that of a fox. These animals devour indiscriminately fruit, flesh, and insects; they destroy fowls and domestic animals, and often attack the inhabitants themselves. The ancients seem to have taken their ideas of harpies from these fierce and voracious creatures, as they both agree in many respects.

The American vampyre bat is smaller than the bat of Madagascar, but is equally if not more formidable. The inhabitants of warm climates, being obliged by the

heat of the weather to leave their windows open, the vampyre enters, and if it finds any part of the body exposed it never fails to fasten upon it, and continues to suck the blood, which it does so gently that the person often dies under the operation.

THE OTTER.

The otter resembles the terrestrial animals in shape, hair, and internal conformation, and the aquatic tribes in its manner of living, and in having membranes between the toes to assist it in swimming. The colour of this animal is brown: its usual length is about two feet from the tip of the nose to the insertion of the tail; the head and nose are broad and flat; the eyes very small; the legs are very short, but remarkably strong, broad, and muscular. The otter has two different methods of catching fish: the one by sinking to the bottom of the river, and whatever fish passes over at that time is certainly taken, for as the eyes of fishes are so placed as not to be able to see under them the otter seizes them at once and drags them on shore; he then returns and catches others in the same way. The other method is by pursuing his prey into some little creek, and seizing it there. Such are the methods by which this animal subsists in the summer; but in the winter, when the lakes are frozen over and the rivers flow with a rapid current, the otter is frequently greatly distressed for provisions, and is obliged to live on grass, weeds, and even the bark of trees. Otters, when taken young, may be taught to fish for their master; they then become very valuable animals, and will catch fish enough, not only to support themselves but a whole family. These animals are to be

met with in most parts of the world. In North America they are usually whitish, inclining to yellow.

THE BEAVER.

The beaver seems to be the only remaining memorial of animal society: from the result of its labours, which are still to be seen in the remote parts of North America, we see the wonderful effects of united instinct. The beaver is the only animal among quadrupeds that has a flat broad tail covered with scales, and this serves as a rudder to direct its motions in the water. In its fore parts it entirely resembles a quadruped; and in its hinder parts it approaches to the nature of a fish. It is about two feet long and one foot high: it is somewhat shaped like a rat, except the tail; its colour is of a light brown; the teeth resemble those of a rat, but are longer and stronger in proportion, and admirably adapted for cutting timber or stripping off the bark, to which purposes they are constantly applied. The beavers begin to assemble about the months of June and July, to form a society that is to continue for the greatest part of the year. They arrive in numbers from every side, and generally form a company of above two hundred. Their place of meeting is commonly the place where they fix their abode, which is always by the side of some lake or river. If it be a lake, in which the waters are always on a level, they dispense with building a dam; but if it be a running stream, which is subject to floods and falls, they then set about building a dam or pier, that crosses the river, so that it forms a stagnant water above and below. This dam is frequently eighty or a hundred feet long, and ten or twelve feet thick at the base.

The part of the river over which this dam is usually built, is where it is most shallow, and where some great tree is found growing by the side of it. This they instantly set about cutting down, and make it serve as the principal beam of their building.

The materials of which the dam consists are wood and clay. The beavers cut with surprising ease large pieces of wood, as thick as a man's arm, and about five or six feet in length. They drive these stakes into the ground at a small distance from each other, intermingling smaller and more pliant branches, and stopping up the cavities with clay. When the dam is completed, their next care is to erect their several apartments, which are divided into three stories, one raised above the other; so that, should the waters increase, they may move a story higher up, and be in no way incommoded. Each apartment is capable of containing eight or ten beavers; and it is said that no fewer than four hundred beavers have been discovered in one large building, divided into a vast number of apartments, all of which had a free communication with each other.

All these works, especially in the northern parts, are finished in August, or September at the latest; after which they begin to lay in their stores. During the summer, they regale themselves with the choicest fruits the country affords; but their winter stores consist of the wood of the birch, the plane, and some other trees, cut into logs of convenient size, and which they steep in water from time to time, as occasion requires. These logs are not thrown up in one continued pile, but laid one across the other with small spaces between them, in order that they may be taken out with greater facility when they are wanted.

The beaver hunters, knowing that green wood is much more acceptable to those animals than that which is

old and dry, place a considerable quantity of it round their habitations, and as they come out to partake of it, they either catch them in snares, or take them by surprise. In the winter, when the frosts are very severe, they sometimes break a large hole in the ice, which they cover with a large and strong net. The hunters then destroy the whole building, and when the beavers fly to the water to escape, they fall directly into the nets, and are inevitably taken.

THE SEAL.

The seal resembles a quadruped in some respects, and a fish in others. The head is round, like that of a man; the nose broad, like that of an otter; the teeth like those of a dog; the eyes large and sparkling; no external ears, but holes that serve for that purpose; the neck is well proportioned, and the body thickest where the neck is joined to it: from thence the animal tapers down to the tail, growing all the way smaller, like a fish. The whole body is covered with a thick, bristly, shining hair, which looks as if it were entirely rubbed over with oil. But it is in the feet that the animal differs greatly from the quadruped kind; for they are so placed on the body that they more resemble fins than feet. Seals vary from four to nine feet in length: they differ also in their colour, some being black, others spotted, some white, and many more yellow. This animal differs also in the formation of its tongue from all other quadrupeds, as it is forked or slit at the end like that of a serpent.

The water is the seal's usual habitation, and whatever fish it can find, is its food. As it is awkwardly formed for going on land, it is seldom found at any

distance from the sea-shore, but basks upon the rocks, and when disturbed, always plunges at once to the bottom. Seals are found in every climate, but in the icy seas they are particularly numerous. They are gregarious, and at certain seasons of the year change their habitations. As their chief food is fish, so they are very expert in catching it. Those places where the herrings are seen in shoals, the seals f equent, and destroy them by thousands. Seals usually sleep soundly when not disturbed, and that is the time the hunters attack them. The Europeans who go into the northern seas on the whale fishery, surround them with nets, and then kill them. But the Greenlander, when he sees a seal asleep, darts his lance at him from his boat, with so unerring an aim, that he never fails to bury it in the animal's side. The seal feeling itself wounded, instantly plunges from the rock into the sea, with the lance sticking in its side; but the lance has a bladder fastened to it, which resists the animal's descent, so that every time the seal rises to the water, the Greenlander strikes it with his oar, until he at last despatches it.

THE WALRUS.

The walrus is an animal of the seal kind, but differing from the rest of that tribe in a very particular formation of the teeth, having two large tusks growing from the upper jaw, shaped like those of an elephant, but directed downwards; it is also much larger than a seal, being from twelve to sixteen feet long. The walrus is seldom to be met with, except in the frozen regions, near the pole; it is much less numerous than it formerly was: and the Greenlanders, who once had plenty, are now obliged to toil much more assiduously

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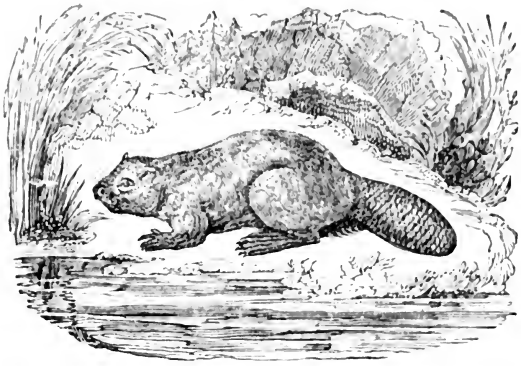
JERBOA *Page* 44



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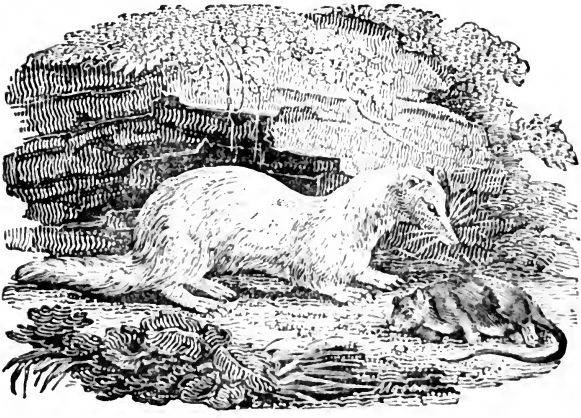

FERRET *Page* 55

for their subsistence. The tusks of the walrus are from two to three feet long; and the ivory is much more esteemed than that of the elephant, being whiter and harder.

THE OURANG-OUTANG.

The ourang-outang, which of all other animals most nearly resembles the human race, is of different sizes, being from three to no less than seven feet high. In general, however, its stature is less than that of a man, but its strength and agility much greater. Travellers who have seen various kinds of these animals in their native solitudes give surprising accounts of their strength, their swiftness, their address, and their ferocity. The face of the ourang-outang resembles that of a man, but the forehead is rather larger, and the head rounder. The ears are like those of a man in most respects; and the teeth have more resemblance to the human than those of any other creature. The bending of the arms and the legs is just the same as in a man, and at first view, the animal presents a figure in a great degree resembling the human. The internal form of this animal also greatly resembles that of a man; it differs, however, from man in the number of its ribs, having thirteen, whereas in man there are but twelve. The tongue, and all the organs of the voice, are the same as those of a man, and yet the animal is dumb; the brain is formed in the same manner, and yet the animal wants reason—an evident proof, as Buffon finely observes, that no arrangement of matter will give mind, unless there be a soul infused into the body to direct its operations.

The ourang-outang brought by Dr. Tyson from Angola, in Africa, was a gentle, fond, and harmless

creature. In its passage to England it would play with the sailors, and embrace them with the greatest fondness. After it was taken, and a little used to wear clothes, it became very fond of them; it would lie in a bed, place its head on a pillow, and pull the clothes upwards, as a man would do.

The animal described by Buffon showed even a superior degree of sagacity. It walked upon two legs, even when it carried burdens. Its air was melancholy, and its deportment grave. Unlike the baboon or monkey, whose motions are violent and appetites capricious, who is fond of mischief, and obedient only from fear, this animal was slow in its motions, and a look was sufficient to keep it in awe. "I have seen it," says Buffon, "give its hand to show the company to the door: I have seen it sit at table, unfold its napkin, wipe its lips, make use of the spoon and fork to eat with, pour out its drink into a glass, touch glasses when invited, take a cup and saucer and lay them on the table, put in sugar, pour out its tea, leave it to cool before drinking, and all this at the sign of its master, and frequently of its own accord. It was gentle and inoffensive, and very respectful to strangers. It would eat indiscriminately of all things, but it preferred ripe and dry fruits to all other kinds of food: it was also very fond of milk, tea, and all kinds of sweet liquors. It continued at Paris but one summer, and died at London."

Pyrard relates that at Sierra Leone there is a kind of ape very strong, and which if properly instructed when young, serves as a very useful domestic. These animals usually walk upright, go to the river and fetch water, which they carry in a pitcher on their heads; but if care be not taken to receive the pitcher at their return, they let it fall to the ground; and when they see it broken, they utter loud lamentations.

In many parts of Africa, the East Indies, Madagascar, and in the island of Borneo, this animal grows to a great size and is truly formidable. In the last of these places, the people of quality course him as we do the stag, and this kind of hunting is one of the favourite amusements of the king himself. This creature is extremely swift and strong. His skin is all hairy, his eyes sunk in his head, his countenance stern, his face tanned, and all his features, though resembling human, harsh and blackened by the sun.

THE BABOON.

The baboon has a short tail, in which it differs from the ourang-outang, which has none, and from the monkey, which has a long one. This animal resembles man only in having hands; and who from having a tail, a prominent face, and sharp claws, approaches more nearly to the savage tribe; it is every way fierce, malicious, and untractable. The baboon is from three to four feet high, very strongly formed, with a thick body and limbs, and canine teeth much larger than those of men. Its tail is crooked and thick, and about seven or eight inches long. Its face is long and thick, and in each side of its cheeks it has a pouch, into which, when satisfied with eating, it puts the remainder of its provisions. It is covered with long thick air of a reddish-brown colour, and pretty uniform over the whole body. It walks more commonly upon all fours than upright, and its hands as well as its feet are armed with sharp claws, instead of the broad round nails of the ape kind.

At the Cape of Good Hope, these animals are under a sort of natural discipline, and go about whatever they undertake with surprising skill and dexterity. When they set about robbing an orchard or a vineyard, they

do not go singly to work, but in large companies, and with preconcerted deliberation. Having appointed a sentinel, some of the plunderers enter the orchard, while the others remain without; those within throw the fruit to those that are without as fast as they can; during this time the sentinel continues upon the watch, extremely anxious and attentive, and as soon as he perceives any one coming, he instantly sets up a loud cry, when they instantly scamper off.

The largest of the baboon kind is the mandril, an ugly, disgusting animal, from four to five feet high. Its snout is very long, of a bluish colour, and much wrinkled, which gives it a frightful appearance.

It is a native of the Gold Coast; and is said to walk more frequently erect than on all fours; and when displeased, to weep like a child.

THE MONKEY.

Monkeys are small in stature, and are furnished with long tails, by which they are distinguished from the ape, which is without a tail, and from the baboon, which has a short one. The varieties that occur among monkeys are very great; it is said there are more than fifty different kinds on the Gold Coast alone. There is scarcely a country in the tropical climates but swarms with them, and scarcely a forest that is not inhabited by a race of monkeys distinct from all others. In their native woods they are not less the pests of man than of other animals. The monkeys are in possession of every forest where they reside, and from the tops of trees carry on an offensive war with other animals, and by their agility escape pursuit. They commit great depredations on birds' nests; and such is their delight in mischief, that they will throw the eggs to the ground

when they have no appetite to devour them. There is but one animal in the forest that ventures to attack the monkey, and that is the serpent. The larger snakes are often seen winding up the trees where the monkeys reside; and when they happen to surprise them sleeping, swallow them whole, before the little animals can make any defence. When a traveller enters among the woods, they consider him as an invader upon their dominions, and they all join to repel the intrusion. They jump from branch to branch, pursue him as he goes along, and make a loud chattering to call the rest of their companions together. They then begin their hostilities, by grinning, threatening, and throwing down the withered branches at him. The negroes consider these animals as their greatest plague; and indeed they do incredible damage when they come in companies to lay waste a field of Indian corn or rice, or a plantation of sugar-canes. On these occasions they are generally seen to keep together in companies, to march in exact order, and to obey the voice of some particular chieftain remarkable for his size and gravity. The chief food of the monkey tribe is fruits, and succulent roots and plants. They are all fond of sweets, and particularly the pleasant juice of the palm-tree and the sugar cane.

BIRDS.

FROM the conformation of the different parts of their bodies, birds seem to be extremely well adapted for swiftness of motion. The shape of their body is sharp before, to pierce and make way through the air; it then rises by a gentle swelling in its bulk, and falls off in an expansive tail, that helps to keep it buoyant while the fore parts are cleaving the air by their sharpness. No one can look upon a bird without being struck with the position of the feathers, lying all one way, and serving at once for warmth and speed. They mostly bend backward, and are laid over one another in an exact and regular order, and supplied with soft down next the body. To prevent the feathers from being injured by the damp, birds are furnished with a gland behind, supplied with oil, which can be pressed out by the bird's bill, and laid smoothly over every feather as occasion requires. The shaft of every feather is made proportionably strong, but hollow below for strength and lightness, and above filled with pith to feed the growth of the vane or beard that springs from the shaft of the feather on each side.

In such birds as fly, the wings are usually placed at that part of the body which serves to balance the whole, and to support it in a fluid so much lighter than itself, The wings are furnished with quills, which differ from the common feathers only in being larger, and from their shafts lying almost close to the bone. In order to move the wings, all birds are furnished with two very strong pectoral muscles, which lie on each side of the breast-bone. By means of these, a bird can move

its wings with a degree of strength which, when compared to the animal's size, is almost incredible. The flap of a swan's wing would break a man's leg; and a stroke from that of an eagle has been known to lay a man dead in an instant. Such is the wing of a bird, combining strength and lightness at the same time. The eyes of birds are more flat than those of quadrupeds, and are furnished with a kind of skin which the bird can at pleasure draw over them. The sense of sight in birds is far superior to that of other animals. Were this less acute, the bird, from the rapidity of its motion, would be apt to strike against every object in its way; and it would be unable to find subsistence unless possessed of a power to discern its food at an immense distance. A kite, for instance, from an almost imperceptible height in the clouds, darts down on its prey with an unerring aim.

All birds are without the external ear projecting from the head; they are only furnished with holes that convey sounds to the auditory canal. The extreme delicacy of the organ of hearing is easily proved by the readiness with which birds learn tunes and are taught to repeat words. The sense of smelling in birds is equally powerful with that of seeing and hearing. By it many of them can perceive their prey at an immense distance, while others are by it securely protected against their pursuers. The legs and feet of birds are both made light, in order that they may pass through the air more easily. The toes in some are webbed, to fit them for the water; in others, they are separate, for holding objects the better. Such as have long legs have also long necks, otherwise they would be unable to gather up their food, either by land or water. The bones of every part of the body of birds are extremely light and thin. The tail, which is composed of quill feathers, serves to balance the head and

neck; it guides the flight of the bird like a rudder and greatly assists it in ascending and descending.

In all rapacious birds the stomach is peculiarly formed. The gullet in them abounds with glands which macerate the food as it passes into the stomach, which is always very large in proportion to the size of the bird. The stomach of granivorous birds is formed very differently from that of the rapacious kinds. After the food has been macerated in the gullet, instead of passing into a soft, moist stomach, as is the case with birds of prey, it is ground between two pairs of muscles, called the gizzard, covered on the inside with a hard ridgy coat, resembling gristle. These coats, rubbing against each other, are capable of bruising and attenuating the hardest substances, and serve the purpose of teeth in other animals.

Birds are subject to one disease from which quadrupeds are in a great measure exempt; this is, the annual moulting which they go through, for all birds cast their feathers and are supplied with a new covering every year. During the moulting season, which lasts through the autumn and winter, they suffer a great deal, and such as are weakly often die during the operation. On the return of spring, however, they are completely recovered, and those warblings which were hushed during the winter now begin to animate the groves. This delightful concert is usually the call of the male to the female, and his efforts to soothe her while sitting on her eggs. Nothing can exceed the patience of birds while hatching; neither the calls of hunger nor the near approach of danger can drive them from the nest. When the female is tired, the male takes her place, and continues there till she returns. As soon as the young are hatched, the parent birds testify the greatest joy, and tend them with extreme care and assiduity—supplying them regularly with food, and feeding each

in his turn. When the whole family is completely fledged, the parent birds lead them forth, when the weather is fine, and teach them how to provide themselves with food. At length, when they are completely able to shift for themselves, the old birds take them abroad for the last time, and thus all connection between them and their young is entirely at an end. Few things have more employed the curiosity of mankind than the migration of birds. It is generally thought that the cause of their leaving their usual abodes is a scarcity of food. Thus, the starling, in Sweden, no longer finding subsistence in that country, comes every year into Germany; in like manner, the quails, in spring, leave the burning heats of Africa for the milder climate of Europe, and when they have passed the summer with us, they steer their flight back again to Africa. The migration of birds from the north usually begins in September, when they quit their retreats and disperse themselves over all the southern parts of Europe. It is very interesting to observe the order of their flight; they generally range themselves in a long line; they sometimes, however, take their flight angularly, two lines uniting thus, >. The bird which leads at the point seems to cleave the air to facilitate the passage for those which are to follow. When fatigued with this laborious station, it falls back, and another takes its place. The feathered inhabitants of the temperate zone are in general not very remarkable for the beauty of their plumage, but they make up for this defect by the melody of their voices; on the other hand, the birds of the torrid zone are very bright and vivid in their colours, but they have screaming voices, or are entirely silent. Birds are more long-lived than quadrupeds; geese have been known to live upwards of eighty years; and the period of the life of a swan is said to exceed a hundred.

THE OSTRICH.

In appearance the ostrich resembles the camel, and is almost as tall; it is covered with a plumage that much more nearly resembles hair than feathers; and its internal parts bear as great a similitude to those of a quadruped as of a bird. It seems, therefore, to form the link between the quadruped and bird creation. The ostrich, next to the condor, is the largest of all birds. It is usually seven feet high from the top of the head to the ground, but from the back it is only four, so that the head and neck are three feet long. The plumage is generally black and white: the largest feathers are at the extremities of the wings and tail. There are no feathers on the sides, nor on the thighs, nor under the wings. The lower part of the neck for about half way is covered with very small black and white feathers. The feathers of the ostrich are almost all as soft as down, and utterly unfit to serve the animal for flying. The neck is very slender compared with the rest of the body. The bill is short and pointed. The tongue is very small, being not above an inch long. The thighs are very fleshy and large, covered with a whitish skin, very much wrinkled. The end of the foot is cloven, and has two very large toes; one of which, including the claw, is seven inches long; the other is about four inches long, and without a claw.

This bird is a native only of the torrid regions of Africa. It seems, indeed, formed to live among the sandy and burning deserts of the torrid zone, where there are few vegetables to be met with. In these inhospitable regions, ostriches are seen in large flocks, which appear at a distance like a body of cavalry, and have often alarmed a whole caravan. The ostrich is the most voracious of birds; it will devour leather, hair,

glass, iron, stones, in a word, whatever is given to it. The ostrich lays very large eggs, some of them measuring above five inches in diameter, and weighing upwards of fifteen pounds. These eggs have a very hard shell, somewhat resembling those of a crocodile, only they are larger, and not so round. These birds are very prolific. It has been commonly reported that the female deposits her eggs in the sand, and leaves them to be hatched by the heat of the sun, and then leaves the young to shift for themselves. This is, however, far from being the case; for she sits on them with great assiduity during the night, leaving them, indeed, in the daytime, when there is no fear of their being chilled. She is also very careful of them after they are hatched, supplying them with food, and defending them from danger. The feathers of the young at first are of an ash colour; but in time these fall off, and are succeeded by a more beautiful plumage. The beauty of the long feathers of the wings and tail is the chief reason why man has been so eager in pursuing this harmless bird. The ancients used these plumes in their helmets; and the ladies of the east now use them as ornaments in their dress; and among us they are used at the funerals of the rich.

The Arabians employ their swiftest horses in hunting the ostrich. As soon as the hunter comes within sight of his prey, he puts his horse into a gentle gallop, keeping the animal constantly in view. Of all creatures that make use of their legs in running, the ostrich is the swiftest, being assisted by his wings as well as his legs; and did he run straight forward, he would soon escape, but he moves in a zig-zag direction, whereas the hunter pursuing him in a straight line meets him at every turn. The chase, however, continues sometimes two or three days, till at last, quite spent, he hides his head in the sand, and suffers himself to

be taken. The strength of these birds is very great; one of them has been known to run faster than an English race-horse, even though he carried two negroes on his back.

THE CASSOWARY.

The cassowary is a bird which was first brought into Europe by the Dutch from Java, in the East Indies. It is no less than five feet and a half long from the point of the bill to the extremity of the claws. The legs themselves are two feet and a half high. The head and neck together are a foot and a half; and the largest toe, including the claw, is five inches long. The wing is so small that it does not appear, it being hid under the feathers of the back. The ends of the wings are adorned with five prickles of different lengths and thicknesses, which bend like a bow. The largest of these prickles is eleven inches in length, and a quarter of an inch in diameter at the root.

The part, however, which most distinguishes this animal is the head. It is bare of feathers, and in a manner armed with a helmet of horny substance, black before and yellow behind. To the peculiar oddity of this natural armour may be added the colour of the eye, which is a bright yellow, and being above an inch and a half in diameter, it has an air equally fierce and extraordinary. The part of the bill which answers to the upper jaw in other animals is very hard at the edges above, and the extremity of it like that of a turkey-cock. As the beak opens very wide, this contributes not a little to the bird's menacing appearance. It is with great propriety said to have the head of a warrior, the eye of a lion, the defence of a porcupine, and the swiftness of a courser.

Notwithstanding its formidable appearance, it is one

of the most inoffensive of animals, and trusts rather to flight than to force for protection. It is an extremely voracious animal, and devours everything that it can swallow. The cassowary's eggs are of a grey ash colour, not so large nor so round as those of an ostrich.

The southern parts of the East India Islands seem to be the natural climate of the cassowary. The species seems to be declining every day, and there is reason to believe it will before long become entirely extinct.

THE EAGLE.

The golden eagle is the largest and noblest of all those birds which have received the name of eagle. It weighs above twelve pounds. Its length is three feet; the extent of its wings, seven feet four inches; the bill is three inches long, and of a deep blue colour; and the eye is hazel-coloured. Its sight and sense of smelling are very acute. The whole body is of a dark brown, and the feathers of the back are finely clouded with a deeper shade of the same. The legs are yellow, short, and very strong, and are three inches in circumference, and feathered to the very feet. The toes are covered with large scales, and armed with the most formidable claws.

In general these birds are found in mountainous and thinly-peopled countries, and breed among the loftiest cliffs, in places the most remote from man. This fierce animal may be considered among birds as the lion among quadrupeds; and in many respects they have a strong similitude to each other. Equally magnanimous, they disdain small plunder, and pursue only animals worthy the conquest. The eagle disdains to share the plunder of another bird; when satiated with his prey, he never returns to it again, but leaves it for other

birds less delicate than himself. Solitary, like the lion he keeps the desert to himself alone: it is as extraordinary to see two pair of eagles in the same mountain as two lions in the same forest.

It requires great patience and much art to tame an eagle; and even though taken young, and brought under by much assiduity, yet it is a dangerous domestic, and often turns its force against its master. Of all animals the eagle flies the highest; and from thence the ancients have given him the epithet of the *bird of heaven*. He has likewise the quickest sight, but his sense of smelling, though acute, is inferior to that of the vulture. He finds no difficulty in carrying off geese and cranes. Infants themselves, when left unattended, have been carried away by these rapacious creatures.

The eagle is thus at all times a formidable neighbour, but particularly so when bringing up its young. An instance is related of a poor man, in the county of Kerry, who got a very comfortable subsistence for his family, during a summer of famine, out of an eagle's nest, by robbing the eaglets of food, which was plentifully supplied by the old ones. It happened some time ago, in the same county, that a peasant resolved to rob an eagle's nest that was built in a small island in the beautiful lake of Killarney. He accordingly stripped and swam to the island, while the old ones were away, and having robbed the nest of its young, he was preparing to swim back, with the eaglets tied in a string; but while he was yet up to his chin in water, the old eagles returned, and missing their young, quickly fell upon the plunderer, and, in spite of all his resistance, despatched him with their beaks and talons. The eagle is said to be able to continue many days without food, and the period of its life exceeds a hundred years.

The osprey, or sea-eagle, lives chiefly upon fish, and consequently builds its nest on the sea-shore. These

birds catch their prey by darting down upon them from above with great force and unerring aim.

THE CONDOR.

The condor possesses in a higher degree than the eagle, all the qualities that render it formidable, not only to the feathered race, but also to beasts and even to man himself. When the wings are extended they reach eighteen feet across. Its beak is so strong as to be able to pierce the body of a cow. So great is its strength that, as the Indians assert, it can carry off a deer in its talons with as much ease as an eagle would a hare. They are frequently met with in the mountains of Quito in South America, and are there very formidable enemies to the flocks of sheep that graze there. It has been supposed that the great bird called by the Arabian writers the *roc*, is a species of condor.

THE VULTURE.

Vultures may be easily distinguished from the eagle kind by the nakedness of their heads and necks, which are without feathers, and only covered with a very slight down, or a few scattered hairs. Their eyes are more prominent, those of the eagle being more buried in the socket. Their claws, also, are shorter and less hooked.

The largest of the vulture tribe measures from the end of the beak to that of the tail four feet and a half. The length of the tail is upwards of two feet. The lower part of the neck, breast, and belly are of a red colour; but on the tail it is more faint, and deeper nearer

the head. The feathers are black on the back, and on the wings and tail, of a yellowish brown.

The vulture's sense of smelling is exceedingly acute, and nature for this purpose has given it two very large apertures, or nostrils. This bird, which is common in many parts of Europe, and but too well known on the western continent, is totally unknown in England. In Egypt, Arabia, and in many other kingdoms of Africa and Asia, vultures are found in great abundance.

In Egypt, indeed, this bird seems to be of singular service. There are great flocks of them in the neighbourhood of Grand Cairo, which no person is permitted to destroy. The service they render the inhabitants consists in devouring all the carrion and filth of that city, which might otherwise tend to corrupt and putrefy the air. In America they lead a life somewhat similar. Wherever the hunters, who there only pursue beasts for their skins, are found to go, these birds are seen to pursue them. As soon as they see the beast flayed and abandoned they call out to each other, pour down upon the carcase, and in a very short time pick its bones as bare and clean as if they had been scraped by a knife.

The species called the King of the Vultures is a native of America; it is larger than a turkey cock, but is chiefly remarkable for the odd formation of the skin of the head and neck, which is bare, and of an orange colour. The eyes are surrounded by a red skin, and the iris has the colour and the lustre of pearl. The head and the neck are without feathers, and covered with a flesh-coloured skin on the upper part, a fine scarlet behind the head, and a duskier-coloured skin before. Upon the naked part of the neck is a collar, formed by soft, longish feathers, of a deep ash colour, which surround the neck and cover the breast before.

THE FALCON.

Falconry, though now disused amongst us, was the principal amusement of our ancestors. A person of rank scarcely stirred out without his hawk on his hand, which in old paintings is the criterion of nobility. Harold, afterwards King of England, when he went on a most important embassy to Normandy, is represented on an old bas-relief as embarking with a bird on his fist, and a dog under his arm.

Of all the falcon tribe the Gyr Falcon ranks the first. He exceeds all other falcons in the largeness of his size, since he approaches nearly to the magnitude of the eagle. The falcon properly so called, ranks next. He is a bird of such spirit that, like a conqueror in a country, he keeps all birds in awe, and in subjection to his prowess. Birds of every kind fly away with screams at his most distant appearance. To train up a hawk to hunt for his master required no small degree of skill and assiduity. Numberless treatises have been written on it, which are now, with the sport itself, almost entirely forgotten.

THE KITE.

The kite may be distinguished from the rest of this tribe by his forked tail, and his slow, floating motion. He seems to rest himself upon the bosom of the air, and not to make the smallest effort in flying. He lives only on accidental plunder, as almost every bird of the air is able to make good his retreat from him. Wherever he finds a small bird wounded, or a young chicken strayed too far from its mother, he instantly seizes on it, and destroys it without mercy.

THE BUZZARD.

The buzzard is a sluggish, inactive bird, and often remains whole days together perched upon the same bough. He lives more on frogs, mice, and insects than upon birds, which he is unable to follow. So incapable is he of instruction, that it has become a proverb to say that any one who cannot be taught, is as stupid as a buzzard.

THE SPARROW HAWK.

This bird is about the size of a pigeon; his beak is short, hooked, and of a bluish tint. The body is of a dark brown colour. Its wings are comparatively short, and consequently he is unfit for training. These birds have, indeed, been taught to fly at game; but little is to be obtained from them, as they are very difficult of instruction, and but little dependence can be placed on their obedience.

THE BUTCHER BIRD.

The butcher bird is about the size of a small thrush; its bill is black, an inch long, and hooked at the end. This bird leads a life of constant combat and opposition. So courageous is this bird that it will fight the crow and the kite, both more than four times its size. It seizes the smaller birds which are its prey by the throat, and strangles them in an instant. When it has thus killed the bird, it fixes it upon some neighbouring thorn, and, thus spitted, pulls it to pieces with its bill. It is supposed that, as nature has not given this bird strength sufficient to tear its prey to pieces with its feet, it is obliged to have recourse to this extraordinary expedient.

THE OWL.

All birds of the owl kind have one common mark by which they are distinguished from others: their eyes are formed for seeing better in the dark than in the broad glare of sunshine. But though owls are dazzled by too bright a light, yet they do not see best in the darkest nights, as some persons have been apt to imagine; it is in the evening and morning twilight that they can see the best. It is then that they issue from their retreats to hunt or surprise their prey; it is then that they find all other birds asleep, or preparing for repose, and they have only to seize the most unguarded. The faculty of seeing with but little light greatly differs in the different species: the common white or barn owl, for instance, sees with such exquisite acuteness in the dark, that though the barn has been shut at night, and the light thus totally excluded, yet it perceives the smallest mouse that peeps from its hole; on the contrary, the brown, horned owl is often seen to prowl along the hedges by day, and sometimes with good success.

All birds of the owl kind may be divided into two kinds—those that have horns, and those that are without. These horns are nothing more than two or three feathers that stand upon each side of the head, over the ear. Of the horned kind is the great horned owl, which at first sight appears almost as large as an eagle; when he comes to be observed more closely, however, he will be found to be much less. When the wings are extended he measures full five feet. His eyes are large and transparent, encircled with an orange-coloured iris; his ears are large and deep; his plumage of a reddish-brown, marked with black and yellow spots.

Of the tribe without horns, the owlet is the largest,

with dusky plumes and black eyes; the screech owl, of a smaller size, with blue eyes, and plumage of an iron grey; the white owl, of about the same size as the former, with yellow eyes and whitish plumage.

All this tribe of animals, how much soever they differ in their size and plumage, agree in seeking their prey by night, having their eyes formed for nocturnal vision. As they are incapable of supporting the light of the day, or, at least, of then seeing and readily avoiding danger, they keep all this time concealed in some obscure retreat, and there continue in solitude and silence. Having spent the day in their retreat, at the approach of evening they sally forth, and skim rapidly up and down along the hedges. Nor are these birds by any means silent; they have all a hideous note, which, being heard in the silence of midnight, is peculiarly harsh and disagreeable. The voice of the screech-owl is, by the common people, considered as a presage of some foreboding calamity that was soon to ensue.

When the pursuit of their prey has been successful, they soon return to their solitude. It sometimes, however, happens that, obeying the dictates of appetite rather than of prudence, they pursue so long that broad day-light breaks in upon them, and leaves them dazzled and bewildered. In this distress they are obliged to take shelter in the first tree or hedge that offers. The little birds then come forward and attack them without mercy. The smallest and most contemptible of this bird's enemies are then the foremost to injure and torment him. They increase their cries around him, flap him with their wings, and tease him in every possible manner. The unfortunate owl, not knowing where to attack or where to fly, patiently sits and suffers all their insults. Astonished and dizzy, he does nothing but make awkward and ridiculous gestures, turning his head and rolling his eyes with an

air of stupidity. The appearance of an owl by day, indeed, sets the whole grove in an uproar.

THE COMMON COCK.

Birds of the poultry kind are furnished with short strong bills for picking up grain, which is their chief sustenance. Their wings are short; for which reason they are not able to fly far. They lay a great number of eggs, and, as they lead their young abroad the very day they are hatched in quest of food, they generally make their nests on the ground.

These animals are among birds what beasts of pasture are among quadrupeds—peaceable tenants of the fields and places under the protection of man.

It is not well ascertained when the cock was first made domestic in Europe, but it is generally agreed that he was imported from Persia. In his wild state, his plumage is black and yellow and his comb and wattles yellow and purple. No animal in the world has greater courage than the cock when opposed to one of his own species, and in many parts of the world cock-fighting is a principal diversion of the people.

The hen seldom rears a brood of chickens above once in a season, though the number of eggs a domestic hen will lay in the year are above two hundred, provided she be well fed. When she begins to sit nothing can exceed her perseverance and patience; she continues for some days immoveable, and though forced away by the importunities of hunger she quickly returns. While she sits, she carefully turns her eggs, and even removes them to different situations; till at length, in about three weeks, the young brood begin to give signs of a desire to burst their place of confinement. When they are all hatched she leads them to provide them

food. Her affection and her pride seem then to alter her very nature. No longer voracious or cowardly, she abstains from all food that her young can swallow, and flies boldly at every creature that she thinks likely to do them mischief. When marching at the head of her little troop she acts the commander, and has a variety of notes to call her numerous train to food, or to warn them of approaching danger.

THE PEACOCK.

As the tiger is the most beautiful among quadrupeds, so the peacock is the most beautiful among birds; for, when he shows himself, with his tail expanded, none of the feathered creation can vie with him. So charmed were the Greeks with his unparalleled beauty, that they made him the favourite of Juno, and feigned that she took out the hundred eyes of Argus and placed them in the peacock's tail.

But though the external appearance of the peacock affords so much delight, yet his horrid scream greatly diminishes the pleasure which the beholder finds in looking on him; besides this, his gluttony and mischievous propensities make him one of the most noxious animals that man has taken under his protection.

Our first peacocks were brought from the East Indies, and it is said that they are still found in vast flocks in a wild state in the islands of Ceylon and Java. When Alexander the Great was in India, he found them flying wild in vast numbers, and was so struck with their beauty that he imposed a heavy fine on all who should kill and disturb them. On their first introduction into Greece, many persons came from Lacedæmon and Thessaly, to Athens, for the purpose of

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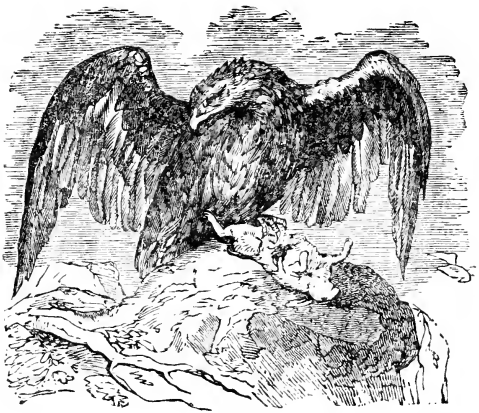
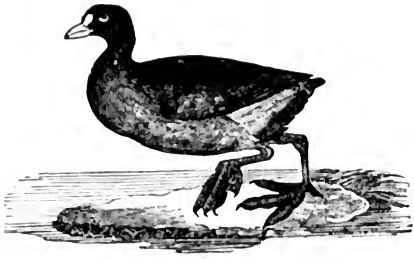
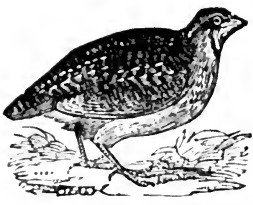


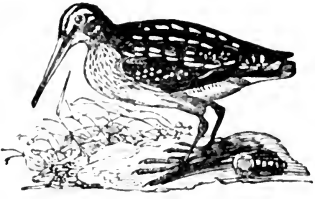
EAGLE *Page* 79



COOT *Page* 120



QUAIL *Page* 96



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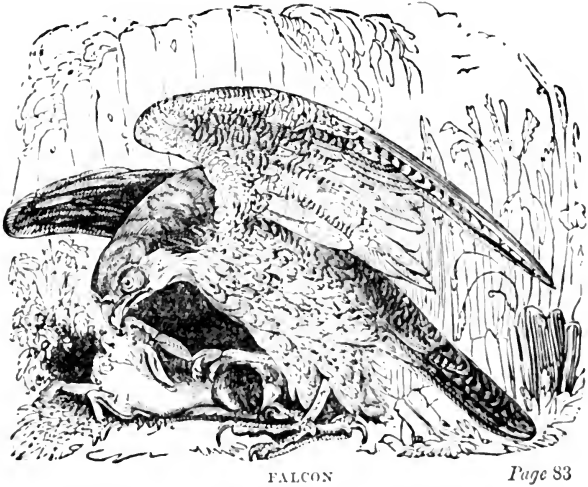

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gratifying their curiosity, and paid a stated price to see them.

From contemplating its figure, mankind began to think of preparing it for the festivities of the table. Hortensius, the Roman orator, was the first who served them up at an entertainment at Rome, and from that time they were considered as one of the greatest ornaments of every feast. With us, however, the flesh is considered very indifferent eating, especially that of the old ones. In the reign of Francis I., King of France, it was the custom to serve up peacocks at the tables of the great; not, indeed, for the purpose of being eaten, but merely to be seen. The manner was to strip off the skin, and then preparing the body with spices they covered it again with its skin, with all its plumage in full display. The bird thus prepared was often preserved for many years uncorrupted, and served to grace a great number of entertainments.

The peacock lives about twenty years, and it is not till his third year that he has the beautiful variegated plumage which adorns his tail. The female is destitute of this splendid appendage, and is generally of a light brown colour. She lays five or six eggs, and sits upon them from twenty-seven to thirty days.

THE TURKEY.

The turkey, it is said, was first imported into Europe from the American continent soon after its discovery. With us it is, when young, one of the tenderest birds. In its wild state, it is found in great plenty in the forests of Canada, which are covered with snow three-quarters of the year. In their native woods they are found much larger than in their state of domestic captivity. They are much more beautiful also, their

feathers being of a dark grey, bordered at the edges with a bright gold colour. They seem a stupid, vain, and querulous tribe, apt enough to quarrel among themselves, yet without any weapons to do each other any serious injury. Everybody knows the strange antipathy the turkey-cock has to a red colour, how he bristles, and with what a peculiar gobbling noise he flies to attack it. But though so furious among themselves, they are weak and cowardly against other animals, though far less powerful than themselves.

When once grown up, turkeys are very hardy birds, and feed themselves at very little expense to the farmer. Those of Norfolk are said to be the largest in this kingdom, weighing from twenty to thirty pounds.

THE PHEASANT.

The pheasant was first brought into Europe from the banks of the Phasis, a river of the ancient Colchis in Asia Minor, from which they derive their name. Next to the peacock, they are the most beautiful of birds, as well for the vivid colour of their plumage, as for the happy mixture and variety of it. It is far beyond the power of the pencil to paint anything so glossy, so bright, and in which the colours so finely blend into each other. Nothing, in fact, can satisfy the eye with a greater variety and richness of ornament than this beautiful creature. The iris of the eye is yellow, and the eyes themselves are surrounded with a scarlet colour, sprinkled with small specks of black. On the fore part of the head there are blackish feathers, mixed with a shining purple. The top of the head and the upper part of the neck are tinged with a darkish green, that shines like silk. The feathers of the breast, the shoulders, the middle of the back, and the sides under

the wings, have a blackish ground, with edges tinged of an exquisite colour, which appears sometimes black and sometimes purple, according to the different lights in which it is placed. There are black spurs on the legs, shorter than those of a cock. The female pheasant is much less beautiful than the male.

This bird, so beautiful to the eye, is not less delightful to the taste. Its flesh is considered as a very great dainty, and has always been very highly esteemed.

Of the pheasant there are many varieties. There are white pheasants, crested pheasants, and spotted pheasants; but, of all others, the golden pheasant of China is the most beautiful. It is a doubt whether even the peacock itself can be compared with this pheasant for beauty.

THE GUINEA HEN.

This is a very remarkable bird, and it in some measure unites the characteristics of the pheasant and the turkey. It has the fine delicate shape of the one, with the bare head of the other. It is rather larger than a common hen; but, as it is supported on longer legs, it looks much larger. Its back is round, and its tail turned downwards like that of a partridge. The whole is black or dark grey, speckled with white spots. Its restless gait and odd cry distinguish it from all other birds whatever. It is well known all over Europe, and even better than with us, as the nations that border on the Mediterranean probably had it before us, from Africa, its native place.

Their eggs, like their bodies, are speckled. In our climate they lay but five or six in a season, but they are far more prolific in their native sultry regions. They are kept among us rather for show than for use, as their flesh is not much esteemed, and as they give a good deal of trouble in rearing.

THE BUSTARD.

The bustard is the largest land bird that is a native of Britain. It was once much more numerous than it is at present, but the increased cultivation of the country and the extreme delicacy of its flesh have tended greatly to thin the species. The bustard is much larger than the turkey, the male generally weighing from twenty-five to thirty pounds. The neck is a foot long, and the legs a foot and a half. The wings are not proportionable to the rest of the body, being but four feet from the tip of the one wing to the tip of the other, for which reason the bird flies with great difficulty. The head and neck of the male are ash-coloured, and the back is barred transversely with black, bright, and rust colours. These birds have frequently been seen in flocks of fifty or more in the extensive downs of Salisbury Plain, on the heaths of Sussex and Cambridgeshire, and in Dorsetshire.

They make their nests on the ground, only just scraping a hole in the earth, and sometimes lining it with a little long grass or straw. They lay only two eggs, about the size of a goose's egg, and of a pale olive-brown, marked with spots of a darker colour; these are hatched in about five weeks, and the young ones run about as soon as they are out of the shell.

THE GROUSE.

The cock of the woods, the black cock, the grouse, and the ptarmigan are all birds of a similar nature, and are chiefly found on heathy mountains and piny forests, at a distance from mankind. The cock of the woods is sometimes of the size of a turkey, and often weighs nearly fourteen pounds; the black cock, of

which the male is all over black, though the female is of the colour of a partridge, is about the size of a hen, and, like the former, is found only in the Highlands of Scotland; the grouse is about half as large again as a partridge, and its colour resembles that of a woodcock, but redder; the ptarmigan is still somewat less, and is of a pale brown or ash colour. The female is much less than the male, and entirely unlike him in plumage, so that she might be mistaken for a bird of another species. She seldom lays more than six or seven eggs, which are white and marked with yellow, and are of the size of a common hen's egg; she generally lays them in a dry place, and on mossy ground, where she hatches them.

THE CURLEW.

The curlew is about the size of a duck, with a bill four inches long. The feathers of the head, neck, and back are black. These birds are considered as very excellent eating; those, however, that are met with on the sea-shore are very rank.

THE WOODCOCK.

The woodcock is rather less than a partridge. Its bill is about three inches long. This is a very timid bird, and keeps among the bushes, where it is sheltered from observation. Its flesh is very highly valued, and consequently this bird is much sought after by the sportsman.

THE SNIPE.

This is a very small bird, weighing not more than about four ounces. The back and wings are of a dusky

colour, and the breast and belly of a dirty white. These birds feed on worms and insects, which they find in ponds and marshy places. Their flesh is considered excellent eating. The snipe is a migratory bird, visiting us at the beginning of winter, and leaving us at the beginning of spring.

THE PLOVER.

The plover is about the size of a pigeon; its wings are black, with tips of greenish grey. These birds frequent marshes, where they breed and bring up their young. In winter they come down from their retreats, which are rendered uninhabitable by the flooding of the waters, and seek their food about our ditches and marshy meadow grounds.

THE LAPWING.

The lapwing is about the size of a pigeon. The female lays four or five eggs, of a dirty yellow, marked with black spots. The arts of the lapwing to allure men and dogs from her nest are extremely amusing. When she perceives her enemies approaching, she never waits till they arrive at her nest, but boldly runs to meet them; when she has come as near them as she dares to venture, she then rises, with a loud screaming, before them. Thus she flies, with great clamour, screaming round her assailants, striking at them with her wings, and fluttering as if she were wounded. If they are very near her nest she then seems quite unconcerned, and her cries cease, though her fears are really increased. If there be dogs, she flies heavily at a little distance, as if maimed; the dogs pursue, hoping every moment to seize her. When she has thus drawn

her pursuers away from her nest, she then rises in the air and rapidly flies off. The eggs of these birds are highly valued by epicures.

As the young of these birds are soon hatched, so they quickly arrive at maturity, and run about their mother as soon as they leave the egg. As the flesh of these birds is in high estimation, many methods have been devised for taking them.

THE FIELDFARE.

The head of the fieldfare is ash-coloured and spotted with black, and the back is of a deep chestnut colour. These birds collect in great flocks, and, while feeding, one of them, it is said, acts as sentinel to warn the rest of approaching danger. They are migratory, coming to us in the autumn and remaining with us during the winter, but leaving in the spring. Their flesh is much esteemed for its delicacy.

THE PARTRIDGE.

The partridge may in an especial manner be considered as belonging to the sportsman. It is a bird which our laws have taken under their protection, and, like a peacock or hen, is regarded as private property. Of partridges there are two kinds—the grey and the red. The red partridge is the larger of the two, and often perches upon trees; the grey, with which we are best acquainted, is most prolific, and always keeps on the ground.

The partridge is a bird well known all over the world, as it is found in every country and climate, as well in the coldest as the hottest. Whenever a dog,

or other formidable animal, approaches the nest, the female uses every art to draw him away: she keeps just before him, pretends to be incapable of flying, just hops up and then falls down before him; at length, when she has drawn him entirely away from the nest, she at once takes wing, and leaves him in surprise at being thus deceived. After the danger is over, and the dog withdrawn, she then calls her young, who assemble at once at her cry, and follow wherever she leads them. There are generally from ten to fifteen in a covey, which, if unmolested, live about fifteen years.

THE QUAIL.

The quail is not above half the size of the partridge. The feathers of the head are black, edged with rusty brown; the breast is of a pale yellowish red, spotted with black; the feathers on the back are marked with lines of a pale yellow, and the legs are of a pale colour. Quails are birds of passage; they fly two by two, continuing, when the way lies overland, to go faster by night than by day, and to fly very high in order to avoid being surprised by birds of prey. It is, however, asserted that they fly only from one province to another. In England they only remove from the inland counties to those bordering on the sea, where they continue all the winter.

These birds are much less prolific than the partridge, seldom laying more than six or seven whitish eggs, marked with ragged rust-coloured spots.

THE RAVEN.

The raven is distinguished from the crow and the

rook, not only by his size, but by his bill being somewhat more hooked. This bird is found in every region of the world; strong and hardy, he is uninfluenced by the changes of the weather, and when other birds seem benumbed with cold, or pining with want, the raven is active and healthy, busily employed prowling for prey.

A raven may be tamed for almost every purpose to which birds can be applied. He may be trained for fowling like a hawk; he may be taught to fetch and carry like a spaniel, and to speak like a parrot; indeed, when tamed, he has many qualities that render him extremely amusing. But, then, with the amusing qualities of a favourite, he has also his vices and defects. He is a glutton by nature, and a thief by habit. A piece of money, a tea-spoon, or a ring, are always tempting baits to him; these he will slily seize upon, and, if not watched, will carry to his favourite hole.

In his wild state, the raven is an active and greedy plunderer. Nothing comes amiss to him; whether his prey be living or long dead, it is all the same, he falls to with a voracious appetite, and when he has gorged himself, he flies to acquaint his fellows, that they may participate in the spoil. These birds build their nests in trees, and lay five or six eggs, of a pale green colour, marked with small brownish spots. They live sometimes in pairs, and sometimes in great numbers, in the neighbourhood of populous cities.

The raven was held in great respect by the Romans, who considered the bird ominous, and paid it, from motives of fear, the most profound veneration. One of these birds, who had been kept in the temple of Castor, as Pliny informs us, flew down into the shop of a tailor, who was much pleased with the visits of his new acquaintance. He taught the bird several tricks, and, among other things, to pronounce the name of the emperor Tiberius, and the whole of the imperial

family. The tailor was beginning to grow rich by those who came to see this wonderful raven, when an envious neighbour, displeased at the tailor's success, killed the bird, and deprived him of his future hopes of fortune. The Romans, however, took the poor tailor's part, and punished the man who committed the injury, and gave the raven all the honours of a magnificent interment.

The raven is a long-lived bird, having been known to live nearly a hundred years.

THE COMMON CROW.

The crow resembles the raven in its appetites, and in its manner of bringing up its young. It differs chiefly in being less bold, less docile, and less favoured by mankind. This bird is about one-third smaller than the raven, and is much more social. When these birds are feeding, they appoint one of their number as sentinel, who sits perched on the top of a high tree, and as soon as he perceives any danger, he instantly gives notice, when they all fly off.

THE ROOK.

The rook, as is well known, builds in woods and forests, in the neighbourhood of man, in which it establishes a kind of legal constitution, by which all intruders are excluded from coming to live among them, and none are suffered to build there but the acknowledged natives of the place. At the commencement of spring, the rookery, which, during the continuance of winter, seemed to have been deserted, or only guarded by five or six, like old soldiers in a garrison, now

begins to be once more frequented, and in a short time, all the hurry and bustle of business fairly commence But, before beginning their nest, the male and female are for some days seen examining all the trees of the grove very attentively, and when they have fixed upon a branch that seems fit for their purpose, they continue to sit upon and observe it very sedulously for two or three days longer. The place being thus determined upon, they begin to gather the materials for their nest, such as sticks and fibrous roots, which they regularly dispose in the most substantial manner. But their eagerness is often too great in the beginning; they soon grow weary of bringing the materials of their nest from distant places, and they very easily perceive that sticks may be provided nearer home, though, indeed, with less honesty. Whenever they see a nest unguarded they rob it of the very choicest sticks of which it is composed. But their fraud does not go unpunished, for the rest fall upon them and destroy their nest in an instant, so that the young pair at length find the necessity of going more honestly to work. While one flies in quest of materials, the other generally sits on the tree as guard, and thus, in the space of three or four days, a commodious nest is provided.

In some countries, these birds are considered as a benefit, in others as a nuisance. Their chief food is the worm of the cockchafer, as well as corn: thus they may be said to do as much service by destroying that noxious insect, as they do injury by eating the corn.

THE MAGPIE.

The magpie bears a great resemblance to the butcher-bird in its bill, as well as in the shortness of its wings

and the form of the tail. But it agrees with it still more in its food, living not only upon worms and insects, but also upon small birds when it can seize them. Magpies are often seen perched upon the back of an ox or a sheep, picking up the insects to be found there, chattering and tormenting the poor animal at the same time. It is a very provident bird, and even in a tame state, will hide its food when it has done eating, and after a time, return to the secret hoard with renewed appetite.

The nest of the magpie is built with surprising labour and ingenuity, so that it is completely defended from the attacks of other birds. This bird, in its domestic state, preserves it natural character; it has the same noisy, mischievous habits as it had in the woods. It can easily be taught to imitate the human voice; but it is, however, in this respect, inferior to the raven and the parrot.

THE JACKDAW.

The jackdaw has a head and bill large in proportion to the size of his body. His colour is black, inclining to blue, but ash-coloured on the breast and belly. He is about the size of a small pigeon. He is very docile and loquacious. He builds in steeples, old castles, and high rocks. The female lays about five or six eggs in a season. These birds live in society, and feed on grain and insects. Jackdaws may be easily taught to pronounce several words. Like the magpie, they are much addicted to stealing small pieces of money and silver spoons, and thus sometimes occasioning the innocent to be suspected.

THE JAY.

The jay is one of the most beautiful of British birds. The forehead is white, streaked with black; the head is covered with very long feathers, which it can erect into a crest at pleasure; the whole neck, back, breast, and belly are of a faint purple, tinged with grey; the wings are most beautifully barred with a lovely blue, black, and white; the tail is black, and the feet of a pale brown. Like the magpie, it feeds upon fruits, and will kill small birds. The jay builds a large nest, and lives on chestnuts and acorns. The hen lays five or six eggs of a dull white colour, mottled with brown.

THE TOUCAN.

Of this extraordinary bird there are three or four varieties. It is about the size of a jackdaw, with a large head to support its monstrous bill; this bill is six inches and a half long, and its breadth rather more than two. The hinder part of the neck, the back, the wings, tail, belly, and thighs are black; and the under side of the head and throat are white. There is no bird secures its young better from external injury than the toucan. It has not only birds and serpents to guard against, but also a numerous tribe of monkeys, still more mischievous and hungry than the rest. This bird is found only in the warm climates of South America, where it is in great request, both for the delicacy of its flesh, and the beauty of its plumage.

THE WOODPECKER.

The woodpecker lives chiefly upon the insects contained within the body of trees; and in order to obtain

them, he is furnished with a straight, hard, strong, angular, and sharp bill, made for piercing and boring. This bird has a very long tongue, round, and ending in a sharp, stiff, bony substance, dentated on each side to strike ants and insects when dislodged from their cells. Of this bird, there are many varieties. The green woodpecker is about the size of a jay; the throat, breast, and belly are of a pale greenish colour, and the neck and feathers of the wings are green.

When a woodpecker finds out a rotten hollow tree, where there are worms, ants' eggs, or insects, it immediately prepares for its operations. Resting by its strong claws, and leaning on the thick feathers of its tail, it begins to bore with its sharp strong beak, until it lays open the internal part of the tree. The insect colony immediately run about in terror and confusion, while the bird thrusts out its long tongue till it has devoured the whole brood.

In its native habitation, this bird, having to guard against monkeys and snakes, which live among the trees, builds its nest at the extremity of the branches, to which these animals cannot approach.

THE BIRD OF PARADISE.

This bird appears to the eye as large as a pigeon, though in reality the body is not much larger than that of a thrush. The tail, which is about six inches, is as long as the whole body. The wings are large in comparison with the other parts of the body. The head, the throat, and the neck are of a pale gold colour. The base of the bill is surrounded by black feathers, as also the side of the head and throat, as soft as velvet. The hinder part of the head is of a shining green, mixed with gold. The body and wings are covered with

beautiful brown, purple, and gold feathers. But what chiefly excites our curiosity, are the two long naked feathers that spring from the upper part of the tail, and which are usually about three feet long.

This beautiful bird is a native of the Molucca islands. It is said to have received its name from its being generally seen on the wing, and flying at a small distance from the land, being, as it were, an inhabitant of the sky alone.

THE CUCKOO.

This singular bird, which is somewhat less than a pigeon, and of a greyish colour, is distinguished from all other birds by its round prominent nostrils. Having disappeared all the winter, it discovers itself in our country early in the spring by its well-known cry. The cuckoo, which is silent for some time after its appearance, begins, at first feebly, and at distant intervals, to utter its call, which, as the summer advances, improves both in frequency and loudness.

Nothing is better ascertained than that the female of this bird makes no nest of her own, but makes choice of that of a hedge-sparrow, in which, while the mother is absent, she lays her own eggs. These, the credulous sparrow sits upon and hatches with as much assiduity as her own, and takes as much care to feed, little thinking that she is nourishing an enemy to her own brood. All the birds of the grove look upon the cuckoo as their enemy, and persecute it without mercy, so that to escape them it takes refuge among the thickest branches of some neighbouring tree. At the approach of winter this bird totally disappears. Some persons suppose that it lies hid in hollow trees; others, that it migrates to warmer climates. The latter opinion, however, seems to be most probable.

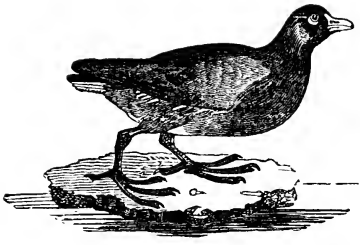
THE PARROT.

The parrot is the best known among us of all foreign birds, and unites the greatest beauty with the greatest docility. Its voice, also, is more like that of a human being than any other bird's.

The plumage of these birds is extremely beautiful. Some of them are red, some green, and some of them are decked with a variety of gaudy hues. The ease with which this bird is taught to speak, and the great number of words which it is capable of repeating, are very surprising. Parrots are extremely numerous in their native countries; the forests, indeed, swarm with them. Though there are many different species of parrots, yet they may be principally reduced to three; namely, the macaw, the parrot properly so called, and the parroquet. Of these, the macaw is the largest, the parrot is of the middle size, and the parroquet is the smallest.

As these birds cannot readily hop from bough to bough, their legs not being adapted for that purpose, they make use both of the beak and the feet, first catching hold with the beak, as if with a hook, and then drawing up the legs, and fastening them, and so on till they have attained the height they aim at. The parrot, though common enough in Europe, will not, however, breed here, the climate being too cold for its warm constitution, and though it bears our winters when arrived at maturity, yet it is always dull and torpid in very cold weather.

Willoughby tells the following surprising story of a parrot belonging to Henry VII., King of England. This monarch, then residing at Westminster, the parrot one day sporting on his perch, fell into the water, at the same time crying out as loud as he could, "A boat! a boat! twenty pounds for a boat!" A waterman, who



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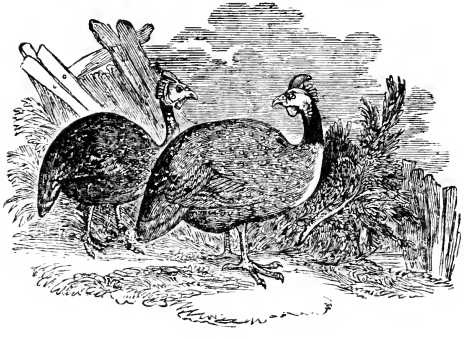
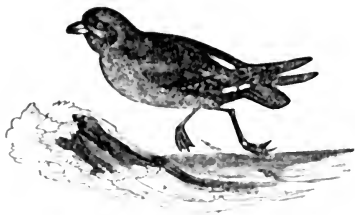
PELICAN *Page* 120



GUINEA FOWLS *Page* 91



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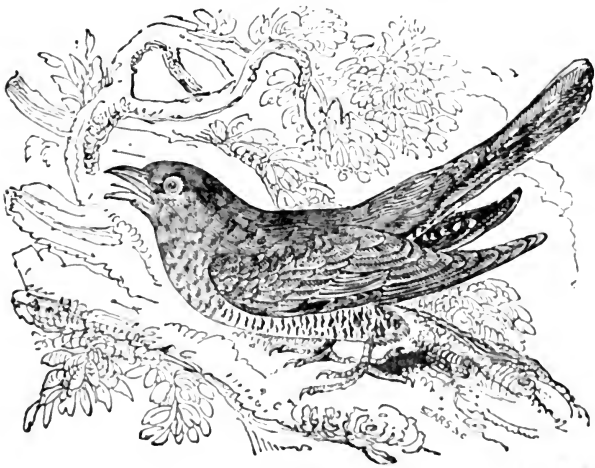
CURLEW *Page* 93



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happened to be near, hearing the cry, rowed to the place where the parrot was floating, and taking him up restored him to the King. The bird, it seems, was a favourite; the man insisted that he ought to have the reward offered by the parrot, and said that the King was bound in honour to grant it. The King at last referred the matter to the parrot, who immediately cried out, "Give the knave a groat."

The sagacity which parrots show in a domestic state seems also natural to them in their native residence among the woods. They live together in flocks, and mutually assist each other against other animals, either by their courage or their notes of warning.

THE PIGEON.

The tame pigeon and all its varieties derive their origin from one species called the stock-dove, implying that it was the stock or stem, from which all the others have been propagated. This bird, in its natural state, is of a deep bluish-ash colour, the breast being tinted with a fine changeable green and purple: its wings are marked with two black bars; the back white, and the tail barred near the end with black.

These are the colours of the pigeon in a state of nature; and from these simple tints, has man, by art, propagated an endless variety.

The stock-dove, in its native woods, differs from the ring-dove by its breeding in the holes of rocks and the hollows of trees. All other birds of the pigeon kind build, like rooks, in the topmost branches of the forest, and choose their habitation as remote as possible from man. The pigeon lays two white eggs, which most usually produce young ones of different sexes. The male and female sit upon the eggs by turns. These

turns are usually regulated with great exactness. From four o'clock in the afternoon till nine on the following day, the female continues to sit; she is then relieved by the male, who takes her place from nine to four, while his mate is feeding abroad.

The carrier pigeon was formerly used for conveying letters. This species is distinguished from all others by their eyes, which are compassed about by a broad circle of white skin, and by being of a dark blue or blackish colour. By what means they are able to discover the place to which they are sent, is to us, utterly inexplicable: certain it is that, in the space of an hour and a half, they have performed a journey of no less than forty miles—a degree of speed equal to that of railway travelling.

THE TURTLE-DOVE.

The turtle-dove is a smaller and much more retired bird than the pigeon. It may be easily distinguised from the rest by the iris of the eye, which is of a fine yellow, and by a beautiful crimson circle that encompasses the eye-lids. The fidelity of these birds to each other is proverbial: if a pair be put in a cage, and one of them dies, the other will not survive. The turtle-dove is a bird of passage, and few or none remain in our northern climates in the winter. They fly in flocks when they come to breed here in the summer, and choose the most retired situations for building their nests. They feed upon all sorts of grain, but are particularly fond of millet seed.

THE SPARROW

The body of this bird is of a greyish black; its bill is black, and there is a black spot under each eye; the

under side of the neck is black edged with white. Its length is nearly six inches, and its extent of wings upwards of eight inches. The sparrow is seldom found remote from the habitations of man, and many of them reside even in towns and cities. The female constructs her nest in a hole in the wall, or under the eaves of a house. She usually breeds three times in a year, and each brood consists of from four to six greenish-white eggs, dotted with dark spots. The sparrow has been known to attain the age of eighteen years. In some parts of the continent the young are cooked for the table.

THE THRUSH.

The thrush is distinguished from all others of its kind by its size, and by its bill, which bends a little at the point. The female builds her nest in bushes or on the side of some tree, and lays four or five eggs in a season. Its song is very fine, which it begins in the spring, sitting on the summit of a high tree. It is the largest of all the feathered tribe that have music in their voice, the note of all the greater birds being either screaming, chattering, or croaking. It feeds on insects, holly and mistletoe berries.

THE BLACKBIRD.

The blackbird is a beautiful singing bird, whistling all the spring and summer time with a note that, at a distance, is the most pleasing of all the grove. It is the deepest-toned warbler of the woods; but it is rather unpleasant in a cage, being loud and deafening. It lays four or five bluish eggs in a nest usually built at the stump of some old hawthorn, well plastered on the inside with clay, and lined with hair.

THE STARLING.

This bird breeds in hollow trees, eaves of houses, towers, ruins, cliffs, and often in high rocks over the sea. It lays four or five eggs of a pale greenish-ash colour, and makes its nest of straw, small fibres of roots, and such like. Its voice is rougher than the rest of its kind; but what it wants in the melody of its note it makes up by the facility with which it is taught to speak. In winter, these birds assemble in vast flocks, and feed upon worms and insects. At the approach of spring they assemble in the fields as if in consultation together respecting their departure, and for three or four days take no nourishment, and then set out on their journey.

THE MOCKING BIRD.

This bird is a native of America, where it is a favourite songster. It is about the size of a thrush, of a white and grey colour, and having a reddish bill. It is possessed not only of its natural notes, which are musical and solemn, but it can imitate the note of every other bird in the wood. It seems even to take pleasure in leading them astray. It will at one time allure the smaller birds with the call of their males, and then terrify them when they come near with the screams of the eagle. There is no bird in the forest but it can mimic; and there is none that it has not occasionally deceived by its call. At other times it will frequent the houses of the American planter; and, sitting all night on the chimney-pot, it will pour forth the sweetest and the most varied notes of any bird whatever

THE NIGHTINGALE.

The nightingale has nothing in its external appearance to afford pleasure, being of a pale tawny colour. This most famous of the feathered tribe visits England in the beginning of April, and leaves us in August. It is found only in some of the southern parts of the country, being totally unknown in Scotland, Ireland, and North Wales. They begin their song in the evening, and generally continue it for the whole night. "How surprising," says Pliny, "that so great a voice can reside in so small a body! such perseverance in so minute an animal! With what musical propriety are the sounds it produces modulated. The note at one time drawn out with a long breath, now stealing off into a different cadence, now interrupted by a break, then changing into a new note by an unexpected transition, now seeming to renew the same strain, then deceiving expectation! She sometimes seems to murmur within herself, then full, deep, sharp, swift, drawling, trembling. In a word, in that little bill seems to reside all the melody which man has vainly laboured to produce by a variety of musical instruments." In the beginning of May the nightingale prepares to build its nest, which is formed of the leaves of trees, straw, and moss. It is made at the bottom of hedges, where the bushes are the thickest and best covered. The female lays four or five eggs, of which but a part in our cold climate come to maturity.

THE ROBIN.

This bird, the well-known friend of man, is found in every hedge, and makes it vocal. The note of other birds is louder; but this bird's voice is soft, tender,

and well supported, and the more to be valued as we enjoy it during the greatest part of the winter. The upper parts of the body of this bird are brown, and its neck and breast of a fine deep reddish orange. During the spring, this bird haunts the wood, the groves, and the garden, and retires to the thickest and shadiest hedgerows to breed in. But in winter, it becomes more domestic, and claims the protection of man. The redbreast continues with us all the year round, and endeavours to support the famine of winter, by chirping round the warm habitations of mankind.

THE LARK.

The lark builds its nest upon the ground, beneath some turf that serves to hide and shelter it. The female lays four or five eggs, of a dusky colour. It is while she is sitting that the male entertains her with his singing; and, while he is rising to an imperceptible height, he still has his loved partner in his eye, nor does he once lose sight of the nest, either while he is ascending or descending. This harmony continues for several months, beginning early in the spring. In winter, these birds assemble in flocks, when their song forsakes them, and the bird-catchers destroy them in great numbers for the tables of the luxurious.

THE WREN.

When we compare the loudness of this bird's note with its size we cannot fail to be struck with wonder. Though the wren does not weigh half an ounce, her song is very sweet, and is very acceptable as it is heard in the middle of winter, when the other songsters

are silent. These birds make a nest not much larger than a hen's egg. The female lays no fewer than eighteen eggs, not much bigger than a pea, and of a whitish colour.

THE GOLDFINCH.

The goldfinch, though a small bird, is very beautiful. His song is very sweet; he may also be taught to imitate the nightingale, at least in some degree. This bird is particularly fond of the seeds of the thistle, and hence he is sometimes called the thistlefinch. In building their nests, they show a surprising degree of skill. The female lays five or six eggs of a whitish colour, marked with purple spots. This bird may be taught to perform a great variety of diverting tricks.

THE BULLFINCH.

The song of this bird is much admired for the mellowness of its note. He may even be taught to whistle like a man. His head and neck are very large when compared with the rest of his body. The colour of the breast is a beautiful scarlet, the crown of the head is black, and the tail white, and the back greyish. These birds build their nests in gardens and orchards, and do much damage to the fruit, of which they are particularly fond.

THE LINNET.

This bird is about the size of the sparrow. There is but little variety in its plumage, since it is nearly all of the same colour, except in the red-breasted species. Its song, however, compensates for its want of beauty,

as it is very melodious. Its nest is composed of small, dry twigs, interwoven with wool, and lined with hair and feathers, and placed in some hedge or low bush. The female lays from four to six greenish-white eggs, marked with spots of brown and purple. She sits very closely, while the male is very attentive in supplying her with food.

THE GOATSUCKER.

This bird is about ten inches in length, and the expanse of its wings is upwards of twenty inches. It is found in Europe, Asia, and Africa. It visits this country about the middle of May, and departs early in September. Like owls, they are seldom seen in the daytime, but in the dark of the evening they come from their retreats, and prey upon insects that fly by night. It has a very peculiar note, which has been compared to that of a spinning-wheel. These birds make no formal nest; the female depositing two or three dull white eggs, spotted with brown, in a hole on the ground.

THE CANARY.

This bird, as its name implies, came originally from the Canary isles; at what period they were introduced into this country is not known. In its native islands, a region equally noted for the beauty of its landscapes and the harmony of its groves, the canary is of a dusky-grey colour, and so different from those usually seen in Europe that some have even doubted whether it be of the same species. These birds have a high piercing note, continuing for some time in one breath without intermission, then rising higher and higher by degrees, with great variety. In choosing a

canary bird, those are to be preferred that appear with life and boldness, and standing upright on the perch. The melody of their song also should be minded. Some will begin with the notes of a nightingale, and running through a variety of modulations, end like a titlark; others will begin like the skylark, and by a soft melodious turn, fall into the notes of the nightingale. Such are the lessons taught it in its domestic state, but its native note is so loud, shrill, and piercing as almost to deafen the hearers.

THE SWALLOW.

Birds of the swallow tribe are all known by their very large mouths, which, when they fly, are always kept open; nor are they less remarkable for their short, slender feet, which are scarcely able to support the weight of their bodies; their wings are of immoderate extent for their bulk; their plumage is glossed with a rich purple, and their note is a slight twittering, which they seldom use except when on the wing. Their food is insects, which they always pursue flying. For this reason, during fine weather, when insects are abroad, the swallows are continually on the wing, pursuing their prey with amazing swiftness.

Early in the spring the swallow returns from its long migration, and revisits our shores. When summer is fairly begun, and more than a sufficient supply for sustaining the wants of nature everywhere offers, the swallow then begins to think of breeding. The nest is built with great industry and art, particularly that of the common swallow, which builds on the tops of chimneys. At the latter end of September, the swallows leave us; and for a few days previous to their departure they assemble in vast flocks, on housetops, as

if deliberating on the fatiguing journey before them. They arrive on the coasts of Africa about the beginning October, having performed their fatiguing journey in about seven days. They are sometimes seen, when interrupted by contrary winds, wavering in their course far off at sea, and lighting upon whatever ship they meet with in their passage. They then seem spent with famine and fatigue; but after a few hours' rest, they renew their flight as before.

THE HUMMING BIRD.

This beautiful little bird varies in size from that of a wren to that of a humble bee. It is a native of America, and greatly adds to the beauty of the landscapes of that country. The feathers on the wings and tail are black; but those on its body and under its wings are of a greenish brown, with a fine red cast or gloss, which no silk or velvet can imitate. It has a small crest on its head, green at the bottom, and, as it were, gilded at the top, and which sparkles in the sun like a little star in the middle of its forehead. The bill is black, straight, slender, and of the size of a small pin. These birds are continually on the wing, and their rapid motions produce a humming sound, from whence they have received their name. The nests of these birds are extremely curious; they are built at the end of the branches of trees, and are formed of cotton, fine moss, and the fibres of vegetables. There are never more than two eggs at a time in a nest, about the size of small peas, and as white as snow, with here and there a yellow speck. The Indians formerly made great use of this bird's plumage in adorning their belts and head-dresses. Their beautiful feathers were, indeed, once the ornament of the highest rank of savage nobility.

THE CRANE.

The crane is rather more than three feet from the tip to the tail, and four feet from the head to the toe. It is a tall, slender bird, with a long neck and long legs. The top of the head is covered with black bristles, and the back of it is bald and red. The plumage in general is ash-coloured; and there are two large tufts of feathers that spring from the pinion of each wing.

The crane is a very social bird, being seldom found alone. Their usual method of flying or sitting is in flocks of fifty or sixty together; and while a part feed, the rest stand like sentinels on duty. As they are birds of passage, they are seen to depart and return regularly at stated seasons. They generally leave Europe about the latter end of autumn, and return in the beginning of summer. In their journeys, the height to which they fly is amazing. Their note is the loudest of all other birds, and is often heard in the clouds when the bird itself is entirely unseen. Its great loudness arises from the very extraordinary length and contortion of the windpipe. Cranes make very great depredations, especially in fields of corn. They generally commit their ravages during the night, and trample down the corn as if it had been crossed over by a regiment of soldiers

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THE STORK.

The stork in general appearance resembles the crane, but greatly differs in its manners and habits. The crane has a loud, piercing voice, whereas the stork is silent; the crane feeds mostly on vegetables and grain, the stork preys entirely on frogs, fishes, birds, and serpents; the crane avoids towns and populous places, the stork lives always in, or near them; the crane lays but two eggs, whereas the stork generally

lays four. Storks are birds of passage, like the crane. Before their departure they all assemble on a particular day, and never leave one of their companions behind them. They generally return to Europe in the middle of March, and make their nests on the tops of chimneys and houses, as well as on high trees.

As the food of these birds consists in a great measure of frogs and serpents, it is not to be wondered at that different nations have paid them a particular veneration. The Dutch, in particular, are very solicitous for the preservation of the stork in every part of their country. The stork, indeed, seems to be a general favourite among the moderns, but the ancient Egyptians carried their regard for it even to adoration. The stork has always been celebrated for filial piety, and for its tenderness and affection for its decrepid parents.

THE HERON.

The common heron is remarkably light in proportion to its bulk, weighing scarcely three pounds and a half, yet it expands a breadth of wing which is five feet from tip to tip. Its bill is very long, being five inches from the point to the base; its claws, also, are very long and sharp, yet thus armed, as it appears, for war, it is a very cowardly bird. It was once the amusement of the great to pursue this timorous creature with the falcon, and heron-hawking was so favourite a diversion among our ancestors that laws were enacted for the preservation of the species, and severe penalties were inflicted on those who destroyed them or their eggs.

Of all birds, this commits the greatest devastation in fresh water, and there is scarcely a fish, however large, that he will not strike at and wound, though unable to carry it away. His method is to wade as

far as he can go into the water, and there patiently wait the approach of his prey, on which, as soon as it appears, he darts with unerring aim. So ravenous are these birds, that it is calculated they will destroy fifteen thousand carp in half a year.

Though this bird lives chiefly among pools and marshes, yet it builds its nest on the top of the highest trees, and sometimes on cliffs overhanging the sea. The nests are made of sticks, and lined with wool, and the female lays four large eggs, of a pale green colour. The heron is said to live upwards of sixty years.

THE BITTERN.

Of all the sounds uttered by the different species of birds, there is none so dismal as the booming of the bittern. It resembles the interrupted bellowing of a bull, but hollower and louder, and may be heard at the distance of a mile. The common people imagine that it thrusts its bill into a reed, that serves it as a pipe to raise its cry above its natural pitch, but it is supplied by nature with a windpipe amply sufficient to produce all the sound it utters.

The bittern is a retired, timorous animal, concealing itself in the midst of reeds and marshy places, and living on frogs, insects, and vegetables. It builds its nest in the midst of rushes and sedges, and lays generally seven or eight eggs of a greenish ash colour. The flesh of the bittern is considered a great delicacy; it is therefore eagerly sought after by the fowler.

THE SPOONBILL.

The common colour of the spoonbill of Europe is a dirty white, but that of the American species is of a

beautiful rose colour. The bill, which in this bird is so very peculiar, is about seven inches long, and, running out broad at the end, is there about an inch and a half wide. This strange instrument is in some black, in others of a light grey, and in those of America it is of a red colour, like the rest of its body.

These birds feed chiefly upon frogs, toads, and serpents, of which, particularly at the Cape of Good Hope, they destroy great numbers, where the inhabitants hold them in as much esteem as the Egyptians formerly did their bird ibis. The spoonbill lays from three to five eggs, white, and marked with a few light red spots.

THE FLAMINGO.

The flamingo is the most remarkable of all the crane tribe; the tallest, the bulkiest, and the most beautiful. The body, which is of a beautiful scarlet, is about as large as that of a swan, but its legs and neck are so long that when it stands erect it is upwards of six feet high. Its wings extended are five feet six inches from tip to tip. Its head is round and small, with a bill seven inches long, partly red and partly black. The legs and thighs, which are very thin, are nearly three feet long and its neck is about the same length. This extraordinary bird is now chiefly found in America, though it seems that it was once known on all the coasts of Europe. Its beauty, its size, and the peculiar delicacy of its flesh, have been such temptations to take it that it has long deserted the places frequented by man, and taken refuge among thinly-peopled countries.

Of all delicacies the flamingo's tongue is the most celebrated. A dish of flamingoes' tongues, says Dampier, is a feast for an emperor. In fact, the Roman emperors considered them as the highest luxury; and

we have an account of one of them, who procured fifteen hundred flamingoes' tongues to be served up in a single dish. The female lays but two eggs. The young ones are a long while before they are able to fly, but they run with amazing swiftness. While young, their colours are much less beautiful than when they are older. In the first year these birds are covered with plumage of a white colour mixed with grey; in the second year the whole body is white; the third year the bird acquires all its beauty, the plumage of the whole body being scarlet, except some of the feathers of the wings that are of a sable hue.

WATER FOWL.

The first great distinction in this class is in their toes, which are webbed together for the purpose of swimming. Those who have remarked the feet of a duck will easily perceive how admirably they are formed for making their way through the water. What man performs by art, nature has supplied to water fowl, and by broad skins has webbed their toes together so that they expand two broad oars to the water, and thus, by moving them alternately, they paddle along with the greatest ease. As their toes are webbed in the most convenient manner, so also their legs are made most suitable for swift progression through the water, being for the most part very short. The shortness of the legs of web-footed birds renders them as unfit for walking upon land, as it qualifies them for swimming in their natural element. Water birds have likewise a closer and warmer plumage than land birds. They are also supplied with a quantity of animal oil, which contributes greatly to their warmth. Their skin is likewise lined with fat, so that by the warmth of the feathers

externally, and this natural lining internally, they are better defended against the changes or the inclemencies of the weather than other birds.

THE WATER HEN.

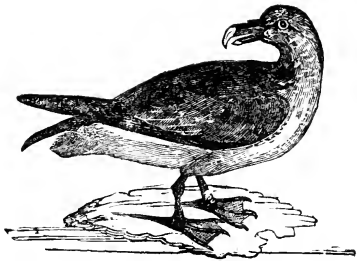
The water hen is a small bird, weighing rather less than a pound. As from the shortness of their wings these birds are ill-formed for flying, and from the uncommon shortness of their legs utterly unfitted for walking, they seldom leave the water, and chiefly frequent those broad, shallow pools where they can fish and seek their prey to the greatest advantage. They are almost perpetually diving, and are very difficult to be shot, as they dart down on the least appearance of danger.

THE COOT.

This bird greatly resembles the water hen. The manner in which it builds its nest is very ingenious. It is formed of interwoven, aquatic rushes in such a manner that it may rise and fall with the stream.

THE PELICAN.

The pelican is about the size of a swan. Its four toes are all webbed together; but that which chiefly distinguishes it from all other birds is its bill, and the great pouch underneath. The bill is fifteen inches long from the point to the opening of the mouth. At the base, the bill is somewhat greenish, but varies towards the end, being of a reddish blue. It is very thick at the beginning, but tapers off to the end, where it



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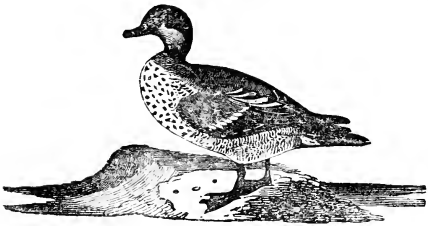

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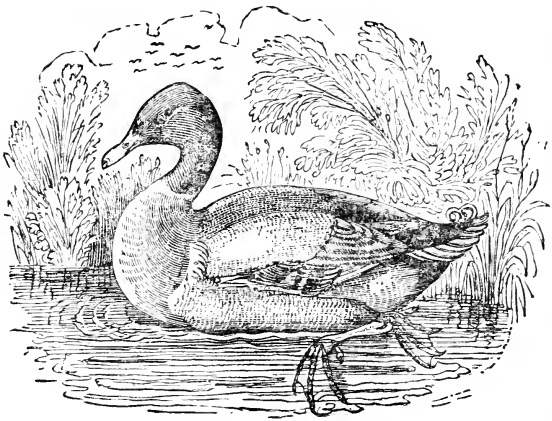

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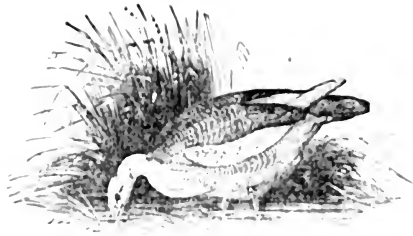

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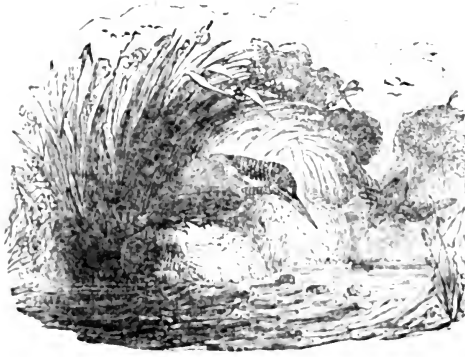

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hooks downwards. The pouch reaches the whole length of the underpart of the bill to the neck, and is said to be capable of containing fifteen quarts of water. It is covered with a short downy substance as smooth and as soft as satin. When it is empty, it is not seen, but when the bird has fished with success, it is then incredible to what an extent it is often seen dilated.

Such is the formation of this extraordinary bird, which is a native both of Africa and America. The pelican was also once known in Europe, particularly in Russia, but it seems to have deserted our coasts. This is the bird of which so many fabulous accounts have been propagated, such as its feeding its young with its own blood, and its carrying a provision of water for them into the desert in its great pouch. The pelican has strong wings, furnished with thick plumage of an ash colour, as are also the feathers over the whole body. Its eyes are very small when compared with the size of the head. It is very slow of flight, and when it rises to fly, it is with great difficulty. These birds are extremely indolent, and it is only from the incitement of hunger, that they can be induced to exert themselves. The female makes no preparation for her nest, nor seems to choose any place in preference to lay in, but drops her eggs on the bare ground, to the number of five or six, and there sits upon them till they are hatched.

THE ALBATROSS.

This is the largest of the gull tribe. Its body is rather larger than that of a pelican, and its wings, when extended, are ten feet from tip to tip. The bill, which is six inches long, is yellowish, and terminates in a crooked point. The top of the head is of a bright

brown, the back is of a dirty spotted brown, the belly is white, and the toes, which are webbed, are of a flesh colour. This bird is an inhabitant of the tropical climates. It is one of the most fierce and formidable of the aquatic tribe, not only living upon fish, but also on such small water fowl as it can take by surprise. It preys, as all the gull kind do, upon the wing; and chiefly pursues the flying fish that are forced from the sea by the dolphins, so that no sooner has this animal escaped from the dolphin than it falls a prey to another enemy equally formidable.

THE CORMORANT.

The cormorant is about the size of a large Muscovy duck. Its head and neck are of a sooty black, and the body thick and heavy. The bill is straight till near the end, where the upper part bends into a hook.

As soon as the winter approaches, these birds are seen dispersed along the sea-shore, and ascending up the mouths of fresh water rivers, carrying destruction to all the finny tribe. They are extremely voracious, and their appetite is never satisfied. It is, indeed, in every respect, one of the most disagreeable of all birds. The great activity with which this bird pursues fish, and the vast height from which it dives after its prey, offers one of the most amusing spectacles to those who stand on the shore and watch its motions.

THE GANNET, OR SOLAND GOOSE.

The gannet is of the size of a tame goose, but its wings are much longer. The bill is six inches long, straight almost to the point, where it inclines down,

and the sides are irregularly jagged, that it may hold its prey with greater security. These birds, which subsist entirely upon fish, chiefly resort to those uninhabited islands where their food is found in great plenty, and where men seldom come to disturb them. The islands to the north of Scotland, the coasts of Kerry, in Ireland, and those of Norway abound with them.

The gannet is a bird of passage. In winter, it seeks the coasts of Cornwall, hovering over the shoals of herrings and pilchards that then come down from the northern seas; its first appearance in the northern islands is in the beginning of spring, and it continues to breed till the end of summer. Wherever the gannet is seen, the fishermen are sure there is plenty of fish; they then prepare their nets, and take the herrings in immense numbers. These birds breed but once a year; their eggs are white, and rather less than those of the common goose; their nest is large, and composed of such substances as are found floating on the surface of the sea.

THE STORMY PETREL.

The petrels and smaller tribe of gulls have a kind of slow, sailing flight, and hover over rivers to prey upon the smaller fishes. Birds of this species are found chiefly in the boldest and rockiest shores, where they bring up their young, and where thousands of them are heard screaming with discordant notes for months together. It is, indeed, in the cavities of rocks that the vast variety of sea fowl retire to breed in safety.

These birds lay but few eggs, and hence in many places, their number is found to be diminishing. Most of this kind are fishy tasted, with black stringy flesh,

yet the young ones are better food, and of these the poor inhabitants of our northern islands make their principal subsistence. In getting at these birds, they are exposed to the greatest danger, as their nests are built in the crevices of rocks upwards of a thousand feet high. When the fowlers have come to the birds within the cliffs, they take them with their hand, as the birds will not readily leave their nests. When they have killed the birds, they throw them into a boat lying ready at the foot of the cliff, and in this manner they can in a short time fill it.

THE PENGUIN.

The penguin is but ill fitted for flight, and still less for walking. Even the duck is not, in its natural state, half so unwieldy an animal as the penguin. The wings of the penguin are much shorter, and more scantily furnished with quills; for this reason the largest of this tribe, that have a thick, heavy body to raise, cannot rise at all. As their wings are unfitted for flight, so their legs are still more ill adapted for walking. But though so ill formed for flight and for walking, this bird is admirably made for living in the water. Nor are they less qualified for diving than for swimming; if they perceive themselves pursued in the least degree, they instantly sink, and show nothing more than their bills, till the enemy is withdrawn.

Of all this tribe, the Patagonian penguin is the largest and most remarkable. It is about the size of a tame goose. The upper part of the head, back, and rump, are covered with stiff black feathers, and the belly and breast are of a snowy whiteness, except a line of black that crosses the crop. They walk erect, and their fin-like wings, hanging down, look like arms.

The penguin lays but one egg, and in frequented shores it burrows like a rabbit; sometimes three or four take possession of one hole, and hatch their young together.

THE PUFFIN.

Words cannot easily describe the form of the bill of the puffin, which differs so greatly from that of any other bird. It is flat, and of a triangular form, and ending in a sharp point. It is of two colours—ash-coloured near the base, and red towards the point. The puffin has its legs thrown so far back that it can hardly move without tumbling; this makes it difficult for it to rise, and subject to many falls before it gets on the wing. These birds build no nest, but lay their eggs either in the crevices of rocks, or in holes, underground, near the shore.

When the young one is hatched, the industry and courage of the parents are incredible. Few birds or beasts will venture to attack them in their retreats. The flesh of the puffin, which is excessively rank, was formerly allowed by the Church to be eaten in Lent.

THE SWAN.

No bird makes a more indifferent figure upon land, or a more beautiful one in the water, than the swan. When it ascends from its favourite element, its motions are awkward, and its neck is stretched forward with an air of stupidity; but when it is seen smoothly sailing along the water, moving at pleasure without the least effort, arching its long neck, there is not a more beautiful figure in nature. The colour of the tame swan is all over white, but that of the wild bird is, along the back and the tips of the wings, of an ash colour.

This beautiful bird feeds chiefly on corn, bread, herbs growing in the water, and roots and seeds that are found near the margin of the stream. It prepares a nest in some retired part of the bank; this is composed of water plants, long grass, and sticks, and the male and female assist in forming it with great assiduity. The swan lays seven or eight eggs, white, and much larger than those of a goose. She sits nearly two months before the young are hatched, which are ash-coloured at first and for some months after. It is very dangerous to approach the old ones when their little family are feeding round them, as they have been sometimes known to give a blow with their pinion that has broken a man's leg or arm. It is not till they are a year old, that the young swans change their colour and become white.

THE GOOSE.

The tame goose is rather larger than the wild one; its colour is white, the bill red, and the legs brown. The wild goose is supposed to breed in the northern parts of Europe, and at the beginning of winter to descend into more temperate regions. These birds are often seen flying at very great heights, in flocks of from fifty to a hundred, and seldom resting by day. Their flight is very regularly arranged; they go either in a line abreast, or in two lines, joining in an angle in the middle.

The tame goose is much more prolific than the wild one; the wild goose seldom lays above eight eggs, the tame goose often lays more than twenty. The female hatches her eggs with great assiduity, and the gander visits her two or three times a day, and sometimes takes her place. When the young ones are hatched he seems to consider himself as their champion, not

only bound to defend them from danger, but even the least suspicion of danger, and pursues dogs and men that never even attempt to molest him. When he has driven off the assailants he returns to his female and her brood in triumph, clapping his wings, screaming, and showing every mark of self-consequence.

Great numbers of geese are kept in the fens of Lincolnshire, which are plucked once or twice a year. Feathers and quills, which are very valuable commodities, make a considerable article of commerce. The feathers of Somersetshire are most valued; those of Ireland are reckoned the worst. Hudson's Bay also furnishes us with very fine feathers and quills of the goose kind.

THE DUCK.

The tame duck is the most easily reared of all our domestic animals; the very instincts of the young ones direct them to their favourite element, and though mostly hatched by a hen, yet they despise the admonitions of their leader. It is usual to lay duck eggs under a hen, because she hatches them better than the original parent. The duck seems to be a heedless, inattentive mother; she frequently leaves the eggs to spoil, and when they are hatched takes very little care of them. The hen, on the contrary, is a nurse of a very different character; she broods over them with the utmost assiduity, and generally hatches a young one from every egg committed to her charge; she does not, indeed, lead them to the water, but she watchfully guards them while there, by standing at the brink and driving away whatever animal might injure them.

The wild duck differs in many respects from the tame one. The most obvious distinction, however, is in the colour of their feet, those of the tame duck being

yellow, and those of the wild duck, black. Wild ducks keep together in flocks during the winter, and fly in pairs in the summer, bring up their young by the water side, and lead them to food as soon as they are out of the shell. Their nests are usually built among heath or rushes, not far from the water, and they lay twelve or fourteen eggs before they sit.

As soon as they arrive among us, they are generally seen flying in flocks to make a survey of those lakes where they intend to take up their residence for the winter. They generally choose that part of the lake where they are inaccessible to the approach of the fowler, in which they lie huddled together, extremely busy, and making a great noise.

The method of taking wild ducks in decoys is so very curious that it would be inexcusable to pass it over in silence.

A place is chosen for this purpose remote from noise. The best situation for a decoy is where there is a large pond, surrounded by a wood, and beyond that a marshy and uncultivated country. On the north and south sides of this pool are three or four ditches, or channels made broad towards the pool, and growing narrower till they end in a point. These channels, or, as they are called, pipes, are covered over with nets, supported by hooped sticks, bending from one side to the other, so that they form a vault or arch, growing narrower and narrower to a point, where it is terminated by a net. The whole apparatus must be hidden from the pool by a hedge of reeds along the margin, behind which the fowler manages his operations. He next provides himself with a number of wild ducks made tame, which are called decoys. These are fed at the entrance of the pipe, and are accustomed to come at the sound of a whistle. As soon as the fowler sees his decoy covered with wild fowl, he walks about the pool,

and casts hempseed on the water; he then whistles to his decoy ducks, who instantly come to the entrance of the pipe, in hopes of being fed as usual; thither, also, they are followed by a whole flock of wild ones, who, pursuing the decoy ducks, are led into the broad mouth of the channel or pipe. As they advance into the pipe, which grows narrower and narrower; having now no hope of retreat they fly into the narrow funneled net below, and are thus taken.

THE WIDGEON

The plumage of the back of this bird is marked with narrow black and white undulating lines, and its bill is of a lead colour. Widgeons commonly fly in small flocks during the night, and may be known from others of this tribe by their whistling note. On the approach of winter these birds leave the northern parts of the world and advance along the shores of various parts of the continent, and also those of the British Isles. Some of these birds are said to go as far south as Egypt. Their flesh is esteemed a great delicacy.

THE TEAL.

The teal is the smallest of the birds of the duck kind; its bill is black, and the head and upper part of the neck is of a bright bay colour, and the breast and belly are of a dirty white. During the winter months this bird is very common in England. The female makes her nest of reeds and grass, and in such a manner that it may rise or sink according to the height of the water. She generally lays six or seven eggs, of a dull white colour, variegated with small brownish

spots. The flesh is considered as superior to that of any other of this species, having less of the fishy flavour than that of the rest of the wild duck kind.

THE KINGFISHER.

This bird, the celebrated Halcyon of the ancients, is not much larger than a swallow; its shape is clumsy, the legs disproportionably small, and the bill disproportionably long. But its colours amply compensate for its inelegant form. The crown of the head and the wings are of a deep blackish grey, spotted with bright blue; the back and tail are of the most resplendent azure; the whole underside of the body is orange-coloured; the tail is short, and consists of twelve feathers, of a rich deep blue; and the feet are of a reddish yellow.

From the diminutive size, the short slender legs, and the beautiful colours of this bird, no person would be led to suppose it was one of the most rapacious little animals that haunts the water. Of this bird many surprising stories have been told. It was said to be possessed of a charm to allay the fury of the waves, and during that period the mariner might sail with the greatest security. The kingfisher with which we are acquainted at present has, however, none of these powers of allaying the storm. It makes its nest on the banks of rivers, and the female begins to lay early in the season. The male, whose fidelity is said to exceed even that of the turtle, brings her large provisions of fish while she is thus employed, so that, contrary to most other birds, she is fat and plump at that time.

FISHES.

The ocean is the great receptacle of fishes. It has been thought by some that all fish naturally belong to the sea, and that they have mounted up into fresh water by some accidental migration. A few still swim up rivers to deposit their spawn, but the great body of them keep to the sea, and would expire in fresh water.

Most fish offer us the same external form, sharp at each end and swelling in the middle, by which they are able to pass through the fluid they inhabit with great celerity and ease. That peculiar shape which nature has granted to fishes we endeavour to imitate in such vessels as are designed to sail with the greatest swiftness; however, the progress of a machine moved forward in the water by human contrivance is trifling compared with the rapidity of an animal destined by nature to reside there. Every part of the body of a fish seems formed for swiftness of motion, and it is to that flexibility of body to which art cannot arrive, that fishes owe their great velocity.

The instruments in a fish's motions are the tail and the fins. The fins differ in number in different fishes. A fish completely fitted for sailing is furnished with two pair, and also three single fins, two above and one below. Thus equipped, it migrates with the utmost rapidity, and takes voyages of a thousand leagues in a season. The fins serve not only to assist the animal in its progress, but also in rising, or sinking, or turning in

the water. To answer these purposes, the pectoral fins serve like oars to push the animal forward; they are placed at some little distance behind the opening of the gills, and are generally large and strong, and answer the same purposes to the fish in the water, as wings do to a bird in the air. These fins serve also to balance the fish's head when it is very large, and keep it from tumbling headlong to the bottom, as is the case when these fins are cut off. Next to these, are ventral fins, placed in the under part of the body: these always lie flat on the water, and they serve rather to depress the fish in the water than to assist its progressive motion; the dorsal fin is situated along the ridge of the back, and serves to keep the fish in equilibrium as well as to assist its motion forward. Lastly, the tail, which in some fishes is flat, and upright in others, seems to be the grand instrument of motion, the fins being but subservient to it.

In a state of repose, a fish spreads all its fins, and seems to rest upon its pectoral and ventral fins near the bottom; if the fish folds the right pectoral fin, it inclines to the right side, and if it folds the left fin it inclines to the left side. When the fish desires to have a retrograde motion, it strikes with the pectoral fins in a contrary direction, which effectually produces it. If the fish desires to turn, a blow from the tail sends it about, but if the tail strikes both ways, then the motion is progressive. If the right pectoral fin be cut off, the fish leans to that side, if the ventral fin on the same side be cut away, then it entirely loses its equilibrium. When the tail is cut off, the fish loses all motion, and gives itself up to where the water impels it.

From hence it appears that each of these instruments has a peculiar use assigned it, but that they all assist each other's motions. Where the head is large and heavy, there the pectoral fins are large, and placed for-

ward to keep it from oversetting. Where the head is small, and therefore not too heavy for the tail, there the pectoral fins are proportionably small.

As most animals that live on land are furnished with a covering to keep off the injuries of the weather, so all that live in the water are covered with a slimy glutinous matter that, like a sheath, defends their bodies from the immediate contact of the surrounding fluid. Beneath this, in many kinds, there is a strong covering of scales, that like a coat of mail, defend it still more effectually, and under these, there is an oily substance which also contributes to supply them with warmth and agility.

Fish are in most respects inferior to quadrupeds and birds. A ceaseless desire for food seems to be their ruling passion. This impels them to encounter every danger; indeed, their rapacity seems to be insatiable. The digestive powers of the maw or stomach of a fish is most extraordinary; it will dissolve prawns, crabs, and lobsters, shells and all. Yet, though fish are so ravenous, yet they can live without food for a very long time. The gold and silver fish that are kept in vases seem never to want any nourishment at all—even the pike, the most voracious of fishes, will live in a pond where there is no fish but himself.

All fish stand in need of air for their support. The manner of breathing with fishes seems to be thus performed:—The fish first takes a quantity of water by the mouth, which is driven to the gills; these then close, and keep the water so swallowed from returning by the mouth, while the bony covering of the gills prevents it from going through them, until the animal has drawn the proper quantity of air from the body of water thus retained, the bony covers then open and gives it a free passage.

The air bladder serves to elevate the body of the fish

in the water. The principle on which it acts is this: When the bladder containing the air is contracted, the bulk of the fish is also contracted, but the absolute weight remaining the same, the specific gravity is increased, and therefore the fish sinks; on the other hand, when the bladder is dilated by air being admitted into it, the body of the fish is also increased in size and the specific gravity diminished, and therefore the body of the fish is lighter than the water, and consequently the fish rises. Thus we see that flounders, skates, and soles, that are without the air-bladder, seldom rise in the water, and that with difficulty.

The stated departure and regular returns of migratory fish is one of the most extraordinary circumstances in natural history. The cod seems to be the foremost of these wandering tribes. This fish's chief place of resort is on the banks of Newfoundland. Hither the cod annually repair in numbers beyond all calculation, and are taken in such quantities that they supply all Europe with a large share of provision. But of all migratory fish the herring and pilchard take the most adventurous voyages. Herrings are found in great numbers in high northern latitudes; there they live on the insect food which those seas supply; but when their food there becomes scarce, which is the case about the middle of winter, they set out on their journey southward in shoals of immense magnitude. As they approach towards the south, their body is divided into several parts by the intervening islands, and they are driven on the coasts of the countries near which they pass, and thus afford a vast supply of food to the inhabitants.

The age to which fish live is not easy to be ascertained, but we have good reason to believe that their longevity is very great. But whatever their longevity may be, it is as nothing when compared with their

fecundity; a mackarel spawning above five hundred thousand eggs, a flounder upwards of a million, and a cod above nine millions, in a single season. Such an amazing increase, if suffered to exist, would overstock nature; but two wise purposes are answered by this amazing increase: the species is preserved in the midst of numberless enemies, and the rest are furnished with abundance of provision.

THE WHALE.

The usual size of the whale is eighty feet in length, and twenty feet in height: it is, in fact, the largest animal of which we have any certain information. There are several species of whale, but it is the great Greenland whale, for the taking of which there are such preparations made in different parts of Europe. It is the largest of the different species, its head alone makes one third of its whole bulk. The fins on each side are from five to eight feet long, and sufficiently strong to give the great mass of body speed and activity. The tail, which lies flat on the water, is above twenty-four feet broad, and when the fish lies on one side its blow is tremendous. The skin is smooth and black, and in some places marbled with white and yellow, which running over the surface has a very beautiful effect.

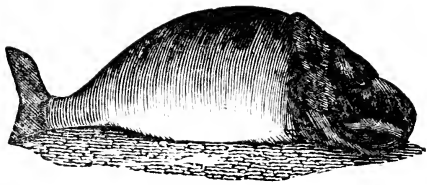
The whale makes use only of the tail to advance forward in the water; this serves as a great oar; the fins are made use of only to enable it to turn in the water, and in giving a direction to the velocity impressed by the tail. The cleft of the mouth is above twenty feet long. The eyes are not larger than those of an ox: they are placed towards the back of the head, by which means these fish are enabled to see before and behind

them, and also over them. The spout-holes, or nostrils are two, one on each side of the head before the eyes, and crooked, somewhat like the holes in a violin. From these holes, the animal blows the water very fiercely, and with such a noise that it roars like a hollow wind, and may be heard at three miles distance. When wounded, it blows more fiercely than ever, so that it sounds like the roaring of the sea in a great storm.

The substance called whalebone is taken from the upper jaw of the animal, and is very different from the real bones of this animal, which are hard like those of quadrupeds, and filled with marrow.

Nothing, it is said, can surpass the fidelity of the male and female fish to each other. An instance is recorded that when one had been killed, the other disdaining to survive, stretched itself upon its slain companion and shared its fate.

The affection of the female for her young one (for she produces but one at a birth) is very great: she carries it wherever she goes, and when pursued supports it between her fins. Strange as it may seem, the whale does not live on the smaller fish, but on a small black insect with which those seas abound, called medusa. One of the most formidable enemies of the whale is the sword-fish, at the sight of which the whale is agitated in an extraordinary manner; leaping from the water as if with affright, and flying from it with the greatest terror. But of all its enemies, man is by far the greatest. The great resort of these fish was found to be near the inhospitable shores of Spitzbergen; hither the European ships found their way as early as the fourteenth century. The English did not commence this business till the beginning of the seventeenth century, and the town of Hull had the honour of leading the way in this lucrative branch of trade. The method of catching whales is too interesting to be passed over



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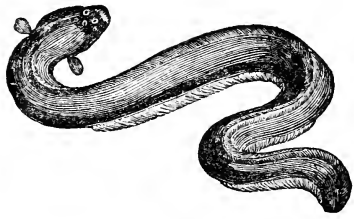

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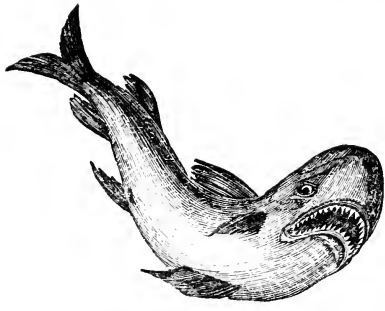

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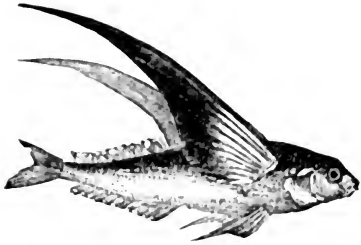

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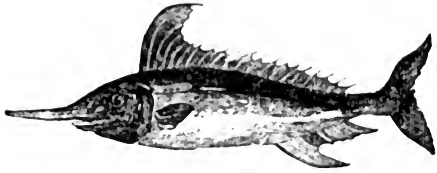
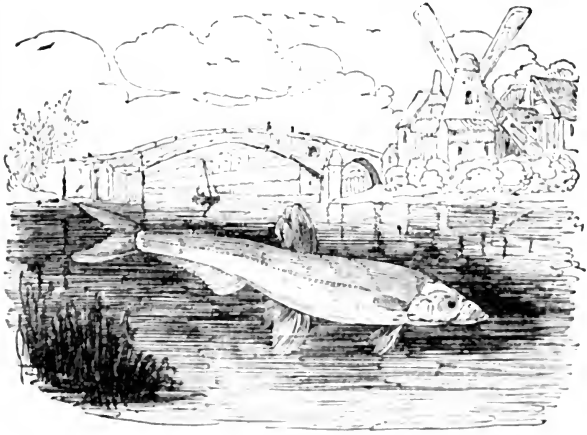


SWORD FISH *Page* 147



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in silence. When arrived at the place where the whales are expected, the sailors keep their sails set, and one of their number is placed at the mast head, to give information when he sees a whale. As soon as he discovers one, the whole crew are instantly busily engaged; they fit out their boats and row away to the place where the whale was seen. The harpooner, who is to strike the fish, stands at the prow of the boat, with a harpoon or javelin in his hand, five or six feet long, pointed with steel, of a triangular shape. As this person's place is that of the greatest skill, so it is also that of the greatest danger; since the whale sometimes overturns the boat with a blow of his tail. As soon as the whale feels the blow, he flies off to the bottom with amazing swiftness with the harpoon sticking in his body, dragging after it the cord to which it is fastened, and which shows the part of the ocean to which he has retreated. The cord runs upon a swivel, and a man stands by to cut it with a hatchet should it become in the least degree entangled, for otherwise it would infallibly overset the boat, and the crew would go to the bottom. But the whale is at length forced to come up for breath; the crew then pursue after him and stick their long spears into his body, till they have despatched him. They then cut up the body into pieces and carry it home in this manner, or extract the oil from it on ship board.

From a species of whale called the *Cachalot*, the substance called spermaceti is obtained. This is found in the head of the whale, and is no other than the brain of the fish. Upwards of nine barrels of oil is thus obtained from the fish, and no inconsiderable portion is also obtained from the spinal marrow.

THE DOLPHIN.

The dolphin is much less than the whale, never exceeding about twenty-five feet in length. The great agility of these animals prevents their being often taken. They seldom, indeed, remain a moment above the water. What could induce the ancients to feel a predilection in favour of this animal, is not easy to account for. Historians and philosophers seem to have contended who should invent the greatest number of fables concerning them. According to their account the dolphin had the greatest affection possible for the human race. Scarce an accident could happen at sea, but the dolphin offered himself to convey the unfortunate person to the shore. At present these fishes are regarded even by the vulgar in a different light; their appearance is far from being esteemed a favourable omen by mariners; and from their boundings, springings, and frolics in the water, experience has taught the seamen to prepare for a storm.

THE PORPOISE.

The porpoise resembles the dolphin, except that it is much smaller, being not more than eight feet in length. It is found in such vast numbers in all parts of the sea that surrounds this kingdom, that they have sometimes been injurious to seamen who sail in small vessels. In some places they almost darken the water as they rise to take breath, and particularly before stormy weather they are much agitated, swimming against the wind, and tumbling about with unusual violence.

The fishermen who spread out their long nets for pilchards on the coast of Cornwall, have sometimes an unwelcome capture in one of these fish. Their feeble

nets, which are formed only for taking smaller prey, are greatly injured from the efforts of this strong animal to escape. There is nothing, therefore, that the fishermen so much dread as the entangling a porpoise, and they do everything in their power to intimidate the animal from approaching. Indeed, these creatures are so violent in the pursuit of their prey, that they sometimes follow a shoal of small fishes up a fresh water river, from whence they find no small difficulty to return. They have often been taken in the Thames at London, both above and below bridge.

THE SHARK.

Of all the inhabitants of the deep, those of the shark kind are the fiercest and most voracious. The white shark is sometimes met with from twenty to thirty feet in length. The head is large and somewhat flatted, the mouth is enormously wide, as also is the throat, and capable of swallowing a man with great ease. But nothing can exceed the terrific appearance of its teeth, of which there are six rows, extremely hard and sharp-pointed. Nor is this fish less terrible to behold in the other parts of his body: his fins are extremely large; he is furnished with very large eyes, that he turns with ease on every side, so that he can see his prey behind him, as well as before him. His skin is rough, hard, and prickly, and it is converted by art into the substance called *shagreen*.

The shark is the dread of the sailors in all hot climates, where he attends the ships in expectation of what may happen to fall overboard. A man who unfortunately falls into the sea at such a time is sure to be devoured by this terrible creature. Such is the voraciousness of this animal that he rejects nothing that has

life. But he seems to have a peculiar liking to human flesh: when once he has tasted it, he always waits in those places where he expects again to meet with it. Accordingly mankind have contrived various methods to destroy him. In this they generally succeed from the shark's own rapacity. The usual method with sailors to take him is by baiting a great hook with a piece of beef or pork, which they throw out into the sea fastened to a strong cord, strengthened near the hook with an iron chain. Without this precaution the shark would quickly bite the cord in two, and liberate himself. As soon as he perceives the bait, he approaches it, examines it, and for a while seems to neglect it. The sailors then make a pretence by drawing the cord, as if intending to take the bait away; whereupon he darts on the bait and swallows it, hook and all. When he finds that the hook is lodged in his stomach, he uses his utmost efforts to liberate himself, but in vain. When he has completely exhausted himself by his fruitless endeavours to escape, the sailors draw him on shipboard, and despatch him by beating him on the head till he dies. This, however, is not done without danger, for the enormous creature, terrible even in death, struggles with his destroyers till the last gasp.

THE HORNED SILURE

This fish is about fifteen feet long, and two broad, and sometimes weighs upwards of three hundred pounds. It has a broad, flat head, and is smooth like the eel, having no scales. It is found in the Danube, and other rivers of Germany, and also in the lakes of Switzerland. It is reckoned excellent food, resembling the eel in taste.

THE GRAMPUS.

The grampus measures from twenty to twenty-five feet in length. In colour it resembles the whale. These fishes are great enemies to the whale, whom they attack in great numbers, and fastening on them make them roar out with pain. The affection of these animals for their young is very great; and they will expose themselves to every danger in order to defend them

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THE SKATE.

The skate is a fish of the ray kind. All fish of this kind are broad, and have spines on different parts of the body or at the tail. They all have their eyes and mouth placed quite under the body. The tail is very differently shaped from that of other fishes; at first sight more resembling that of a quadruped. But what they are chiefly distinguished by, is their spines or prickles, which the different species have on different parts of their body.

Of all the larger fish, these are the most numerous. As they are very large, few fish can swallow them, and even those that can, find them a dangerous morsel, from the sharpness of their spines. These fishes generally choose for their retreats such parts of the sea as have a black, muddy, bottom; the larger ones keeping at greater depths, but the smaller come near the shores. They are exceedingly voracious, and will readily take the bait.

The skate has the middle of the back rough, and a row of spines on the tail. It is very good food, and weighs from ten pounds to two hundred weight, and well rewards the fishermen for the trouble of fishing for it.

THE TORPEDO.

The torpedo is a fish of the ray kind. The body of this fish is almost circular, and thicker than others of this species; the skin is soft, smooth, and of a yellowish colour, marked with large round spots. It varies considerably in size, weighing from a quarter of a pound to fifteen pounds. This fish is remarkable for the power it possesses of producing numbness the instant it is touched. The shock received resembles that produced by an electric machine. "The instant," says Kempfer, "a person touches it, he feels his arm benumbed, as far as the shoulder. Even if a person treads upon it with the shoe on, it affects not only the leg but the whole thigh upwards. The nerves are so affected, that the person struck imagines all the bones of his body, and particularly those of the limb that received the blow, are driven out of joint. All this is accompanied with a universal tremor, a sickness of the stomach, a general convulsion, and a total suspension of the faculties of the mind."

This power of the torpedo seems to proceed from a kind of animal electricity, which this fish has some hidden power of storing up and producing at pleasure. The shocks are entirely the same as those produced by the electrical machine; but how the animal can renew the charge, and how it was originally produced, are difficulties that time alone can discover.

THE LAMPREY.

The lamprey resembles the eel in its general appearance, but is of a lighter colour and clumsier form. Its mouth more resembles that of a leech than an eel; and the animal has a hole on the top of the head through

which it spouts water. Like the leech, this animal has the power of sticking closely to and sucking any body, to which it is applied. The power they possess of adhering to stones is so great, that it is not without difficulty they are drawn off. One that weighed but three pounds held, suspended from its mouth, a stone of no less than twelve pounds; and even then it was separated from it with some difficulty. The lamprey's food is either slime and water, or such small water insects as are scarcely perceptible.

Its usual time of leaving the sea, which it annually does, in order to spawn, is about the beginning of spring; and, after the stay of a few months, it returns again to the sea. Their preparation for spawning is very peculiar; their manner is to make holes in the gravelly bottoms of rivers; and on this occasion their sucking power is very serviceable; for if they meet with a stone of considerable size, they will remove it and throw it out.

This fish, or one very much resembling it, was highly esteemed among the Romans.

THE STURGEON.

The sturgeon in its general form resembles the pike. The nose is long; the mouth is small, and situated beneath, and is without jaw-bones or teeth. The body is long, and covered with five rows of large, bony knobs, one row on the back, and two on each side, and a number of fins to give it greater expedition.

Of this fish there are three kinds; the common sturgeon, the caviar sturgeon, and the isinglass sturgeon. All these fish grow to a great size; and some of them have been found above eighteen feet long.

The inhabitants along the banks of the Po, the

Danube, and the Wolga, make a great profit yearly by their visits to these rivers, and have their nets prepared for their reception. The sturgeon also is brought daily to the markets of Rome and Venice, as they abound in the Mediterranean Sea. Nor are we without frequent visits from this much-esteemed fish in England. It is often accidentally taken in our rivers in salmon nets, and particularly in those parts that are not remote from the sea. In the rivers that empty themselves into the Black Sea this fish is caught in great numbers, particularly at the mouth of the river Don. This fish lives entirely on insects and sea plants. It is extremely timid, and will flee from a fish very much smaller than itself.

The flesh of this animal, pickled, is very well known at all the tables of Europe; and is even more prized in England than in any of the countries where it is usually caught. A very great trade is also carried on in the roe of the sturgeon, preserved in a particular manner, and called caviar: it is made from the roe of all kinds of sturgeon, but particularly from that of the second kind. Caviar somewhat resembles soft soap in consistence: it is of a brown uniform colour, and is generally eaten with bread. But the isinglass sturgeon furnishes a still more valuable commodity. Isinglass is a tough, firm, and light substance, of a whitish colour, in some degree transparent. It is made of the intestines, the fins, and the tail of this fish, boiled down to a jelly, and then dried. This valuable commodity is principally supplied to us from Russia, where the natives prepare vast quantities surprisingly cheap. It is very well known, not only in medicine, but also in the arts. The varnisher, the wine-merchant, and others, are well acquainted with its uses; and very large sums are yearly spent on this one article of commerce.

THE LUMP FISH.

The lump fish is about sixteen inches in length, and its weight is about four pounds. The back is sharp and elevated, the whole skin is rough with bony knobs. If flung into a pail of water, it will stick so close to the bottom, that, on taking the fish by the tail, one may lift up fish, pail and all, although it contains several gallons of water. Great numbers of these fish are found along the coasts of Greenland in the beginning of summer, where they resort to spawn.

THE TURBOT.

The turbot can easily be distinguished from others of this species by its great breadth, which is nearly equal to its length. This fish sometimes weighs twenty-five or thirty pounds. In general, turbots are valued in proportion to their size. They are in season during the first half of the year. The colour of the upper side of the body is of a dark brown, spotted with dirty yellow, and the under side is of a pure white. The turbot is caught by a hook and line; but he is rather difficult to be taken, as he is very particular as to his bait. Herrings, slices of haddock, and lampreys are what he likes the best.

THE JOHN DOREE.

This fish was in much esteem among the ancient Romans; but, though common on the British coast, it was long neglected, till the celebrated comedian Quin restored it to its former celebrity. All modern epicures indeed agree that this fish is a most delicious repast, and it is now established as an article of luxury at the

tables of the rich. It has by no means a prepossessing appearance. The head is large, the snout projecting, the mouth small, the body nearly oval and very flat. The colour is of a dark green, marked with black spots, with a golden gloss; whence its name originated.

THE FLYING SCORPION.

This is a fresh-water fish, inhabiting the rivers of Amboyna and Japan. It is usually about six inches long; has an ugly head, a wide mouth furnished with tendrils; armed with spines and thorns, bristling on its back, and fins like the quills of a porcupine. The body is brown, and the fins are of a dark purple, with white spots. It is extremely voracious, feeding on the young of other fish. From the formidable armour with which this animal is furnished, it has received the name of scorpion.

THE SOLE.

Of all flat fish, the sole is remarkable for its length in comparison with its breadth; and is much esteemed for delicacy of flavour. It is sometimes found of seven pounds weight, but those of one or two pounds are preferred. The largest are taken on the west and south-western coasts of England; but the best-flavoured are found on the eastern coasts, especially off Hartlepool and Scarborough. They grow to the length of from twelve to eighteen inches, and even more. The upper part of the body is brownish, the under part white, the sides are yellow, and the tail rounded at the extremity. These fish are found also in the Mediterranean, and when in season are in great requisition for the tables of the luxurious. The usual food of the sole is the spawn and young of other fish.

THE SEA PORCUPINE.

The sea porcupine has a mouth like a frog, and is from seven inches to two feet long. Like the porcupine, from whence it takes its name, it is covered with long thorns or prickles, which point on every side. When the animal is enraged, it can blow up its body like a bladder. Of this remarkable animal there are several varieties.

THE SWORD FISH.

The body of this fish is round; the head long; the upper jaw terminating by a long beak in the form of a sword. This fish inhabits almost all parts of the Atlantic, from the north to the south temperate zone. In general, this is an inoffensive animal, living chiefly on marine vegetables, and seldom attacks other fish except in self-defence. When provoked it is a very formidable enemy, and inflicts terrible wounds with its sword-like beak. The flesh is considered very good, and is consequently much sought for, especially in Italy and Sicily. The capture of these fish is, however, attended with considerable danger.

THE GUDGEON.

This fish is found in quiet streams. The back is brown, the belly white, the sides tinged with red, and the tail forked. It is about five or six inches in length. Its food consists of insects, and whatever flies approach too near the surface of the water. The flesh of the gudgeon is white, and is considered very good. These fish are taken in great abundance, in the rivers of the continent, during the months of September and October.

THE GAR FISH.

The gar fish, or sea-needle as it is sometimes called, from its long and slender form, is common in the British seas, and affords a good substitute for mackerel, which it resembles in its colours and the flavour of its flesh, and which it precedes a little in its season. It grows to the length of three feet, and is remarkable for the backbone turning green when boiled.

THE MACKEREL.

The mackerel is about a foot long, the body is thick and firm, becoming very slender towards the tail. The back is of a very bright green colour, beautifully variegated with black strokes; the belly is of a silvery white, reflecting the most elegant tints. It visits the coasts of Britain in the summer and autumn. The mackerel is a very voracious fish; it is extremely fond of herrings, and attacks them with great fierceness. The fishermen extend their nets sometimes to the extent of several miles. A single boat has been known to bring in, after one night's fishing, a cargo that has been sold for no less than seventy pounds.

THE MULLET.

The mullet has rather a square head; its back is of a dusky colour, varied with blue and green, and the sides and belly are of a silvery white. It is most abundant in the Black Sea and in the Mediterranean: it is also common on the sandy coasts of Britain. It is gregarious, and the shoals make an annual journey, visiting successively the European, Asiatic, and African coasts.

Its flesh is much esteemed by the inhabitants of the Mediterranean shores and islands, but it is not much in repute among us.

THE HERRING.

The herring is about nine or ten inches long, and about two and a half broad; it has large roundish scales, and a forked tail. Of all migratory fish, the herring takes the longest and most adventurous voyages. They leave the Northern Ocean about the middle of winter, in immense shoals; but they no sooner leave their retreats than thousands of enemies appear to thin their numbers. The porpoise, the grampus, and the shark swallow thousands at a yawn; besides these, the sea fowl follow them, and spread ruin and devastation among them.

That body which comes upon our coasts appears off the Shetland Isles in April. It is the forerunner of the grand shoal that arrives in June. When this main body is arrived, its breadth and depth are such as to alter the very appearance of the ocean. It is divided into distinct columns, of five or six miles in length, and three or four broad. Sometimes they sink for ten minutes or a quarter of an hour, then rise again to the surface; and, in bright weather, they reflect a variety of splendid colours. No sooner do they appear, than the fishermen are ready for them, and, by nets made for the purpose, they sometimes take as many as two thousand barrels at a single draught.

From the Shetland Isles, one body of this great army goes off to the eastern coasts of Ireland, and the other to the western, and furnishes a very considerable amount of food to the inhabitants.

THE SALMON.

The salmon is generally about two feet and a half long, the head rather sharp, and the fins comparatively short. The colour is very beautiful, being a dark blue, dotted with black spots on the back, changing to a silvery white on the sides and belly.

These fish annually quit their native ocean, and come up our rivers to deposit their spawn. There is no danger which they will not encounter, even to the surmounting of precipices, to find a proper place for the deposition of their future offspring. The salmon, upon these occasions, are seen to ascend rivers five hundred miles from the sea. As soon as they come to the bottom of the torrent, they seem disappointed at meeting the obstruction, and swim a few paces back: they then take a view of the danger that lies before them, survey it motionless for some minutes, advance and again retreat; till at last, summoning up all their force, they take a leap from the bottom, their body curved and strongly in motion; and thus most frequently clear every obstruction. The dangers that attend these fish in their migrations are very great. Numberless are the methods employed by mankind to capture them; by the hook, by nets, by baskets, and by other means. Being cured in different manners, either by salting, pickling, or drying, they are sent to all the markets of Europe, and form a very lucrative branch of commerce to those engaged in the trade.

THE PILCHARD.

The pilchard, which is a fish differing but little from the herring, makes the coast of Cornwall its principal place of resort. Their arrival on that coast is soon

proclaimed by their attendants, the birds and the larger fishes; and the fishermen immediately prepare to take advantage of the rich treasure offered to them. They sometimes inclose a space of several miles with their nets, and by this means they take upwards of a thousand barrels of these fish at a draught. This fishery not only employs great numbers of men at sea, training them to naval affairs, but also many women and children on land, in salting and curing the fish. The poor are fed with what remains unsold; the land is manured with the offal; and the fisherman obtains a comfortable subsistence from his toil: so that the arrival of these fish on this coast, may be considered as a great blessing to the inhabitants. Ships are often freighted to this place with salt, and into foreign countries with fish, carrying off, at the same time, a quantity of the produce of the tin mines. The money received for pilchards alone, has frequently amounted to more than fifty thousand pounds annually.

THE CODFISH.

The cod measures nearly three feet in length, and is proportionably thick; the back is of a brown olive colour, with white spots on the sides, and the belly is entirely white. The eyes are large and staring. The cod is found only in the northern parts of the world. This animal's chief place of resort is on the banks of Newfoundland and the other sand-banks that lie off Cape Breton. Hither the cod annually repair, in numbers beyond the power of calculation, to feed on worms and other insects that are found on those banks. Here they are taken in such quantities that they supply all Europe with a considerable amount of provision. The English have stations erected all along the shore, for

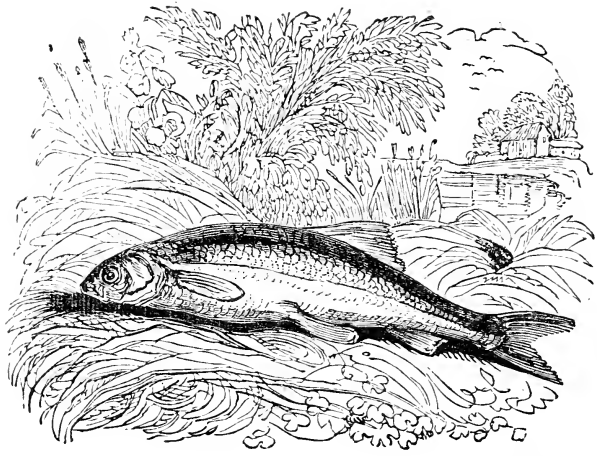
salting and drying them. They are taken with a hook and line, and are caught as fast as the line can be thrown out. This fish is not an unfrequent visitant upon the English shores, but their returns are not so regular as on the coasts of Newfoundland.

THE HADDOCK.

The haddock somewhat resembles the codfish, but it is considerably smaller: it has small scales, and is of a bluish colour on the back. Haddocks are migratory fish; they appear periodically at the same place about the same time annually. They come on our coasts in shoals, of forty miles in length and three miles in breadth. The limits of a shoal are exactly known; for if the fishermen let down their nets at a greater distance than three miles from the shore they catch no haddocks, whereas, if they keep within these limits, they are sure to meet with them.

THE WHITING.

This fish is, in general, not more than ten or twelve inches long. The back is of a silvery whiteness, and when just taken out of the water reflects the rays of light with great lustre and beauty. It is common in all parts of the North Sea, but is said to be the largest on the Dogger Bank, between England and Holland. The flesh is light, wholesome, and nourishing, and very suitable for invalids. Like the haddock, the whiting appears periodically, in vast shoals, extending for a considerable distance, a little way from land.



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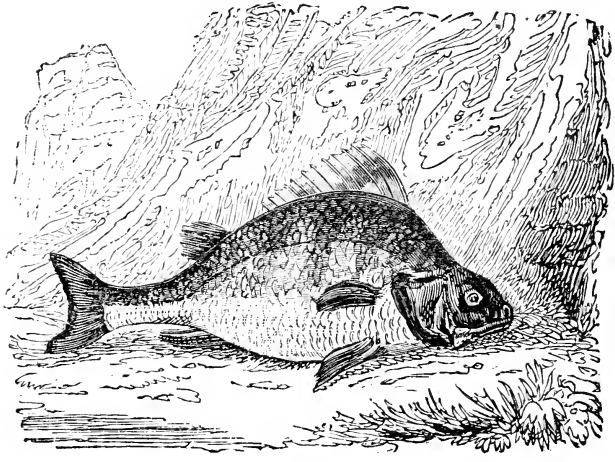

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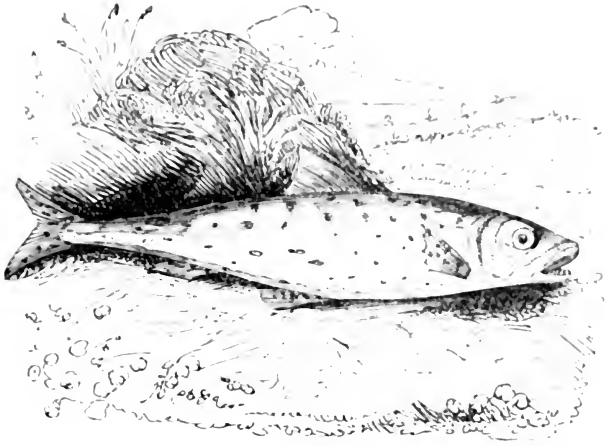

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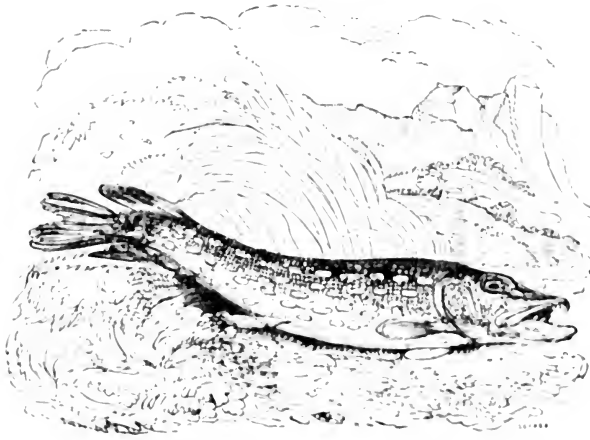

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THE PERCH.

The perch is one of our largest fresh-water fishes, and sometimes is met with of the weight of nine pounds. Its body is nearly as broad as long. The back is marked with greenish bands, and the belly is reddish white. It inhabits both lakes and rivers, and is a common tenant of the fish-pond. It is gregarious, and usually remains in deep water till attracted by a worm, fly, or other prey, which it seizes with avidity and therefore is easily caught. It is said, when an angler meets with a shoal of perch, he may continue catching as long as one remains, from the greediness with which they follow the bait.

THE EEL.

The eel is extremely voracious, and nothing in the shape of food comes amiss to it. As the salmon mounts up the rivers, to deposit its spawn, so the eel descends the fresh-water streams to bring forth her young in the sea. Their migration begins about the month of August. When they have reached the sea and produced their young (for they are viviparous), they again ascend the stream. The young ones generally ascend the stream about the end of January, when they are taken in vast numbers. This fish is very tenacious of life, living a long time out of the water.

THE ELECTRICAL EEL.

At first sight, this animal resembles the common eel, but is soon easily distinguished by its oval head, and blunt snout. It is sometimes three or four feet long,

and ten or twelve inches in circumference. The usual colour is a dark reddish brown. This animal has hitherto been found only at Surinam, in South America. When a small living fish is thrown into a vessel of water containing an electrical eel, the latter swims up to it, and gives it a shock which deprives it of all power of motion. If a person touches the fish he will receive a moderate shock; but if he should apply one hand to the head and the other to the tail, he will receive as smart a shock as from a charged Leyden phial.

THE PIKE.

The body of this fish is of a pale olive grey colour, deepest on the back, and marked on the sides by several yellowish spots; the belly is white, slightly spotted with black. Its length is upwards of four feet. Of all fresh-water fish, the pike is the most voracious. It will attack every fish less than itself; and is sometimes seen choked by attempting to swallow such as are too large a morsel. It is immaterial of what the species the fish which it pursues may be, whether another or his own, all are indiscriminately devoured. So great is the rapacity of the pike, that it will contend with the otter for his prey, and even endeavour to force it from him.

THE FLYING FISH.

In size and general form this fish bears a distant resemblance to the common herring; but is flatter on the head and back, and is much more brilliant in its colours, being of a fine azure on the head, back and sides, and of a silvery whiteness on the belly, and the fins are of a deep blue. The pectoral fins are remarkably large

and long, and enable it to dart out of the water into the air, and to pass through it for a considerable space, whence it has received its name. Its eyes are very prominent, and enable it to see to a great distance around it. Its flesh is delicious, and it is much sought after by birds of prey, as well as by fishes.

THE CARP.

From the largeness of its size, the delicacy of its flavour, and its great fecundity, the carp is the most valuable of all our fresh-water fish. It is, in general, about fifteen inches in length; though it has occasionally been found upwards of three feet long, and upwards of thirty pounds in weight. Its back and sides are of a bluish green, shaded with yellow; the belly is of a silvery white; and the tail is sometimes of a yellow, and sometimes of a violet hue. In flavour, it is superior to all other fresh-water fish. It is remarkable for the largeness of its roe, which is often found to weigh more than the rest of the body. These fish are easily domesticated and rendered familiar, so as to obey a signal and come in shoals to the edge of the water to be fed. It is considered to be so very cunning a fish, that it has sometimes been called the river fox.

THE SMELT.

This most delicate fish is about eight or nine inches long; the body is of a light olive green inclining to a silvery white, and so transparent that with a good microscope the circulation of its blood may be observed. The odour of this fish is very strong and very peculiar, and has been compared to that of cucumbers. Smelts

ascend the rivers in spring to spawn; after which they return to the salt water, and are not seen again till the ensuing spring.

THE REMORA, OR SUCKING FISH.

The sucking fish is about a foot long, and has a long slender body, with a rounded back and a forked tail. It is of a black colour above and whitish beneath. The sucking fish attaches itself to the sides of sharks, turtles, and other marine animals—five of them have been sometimes taken from a single shark; and so firmly do they adhere, that it is almost impossible to separate them without violence. As the opening of the mouth is near the adhesive organ, it is probable they derive nourishment from the fish which they attack, by sucking its juices. The flesh of this fish is eatable, and is said to taste like fried artichokes.

THE SPRAT.

The sprat is about four or five inches long, and in the form of its body resembles a small herring.

This fish arrives in the Thames about the beginning of November, and remains with us till March. They are caught in prodigious numbers, and afford abundance of food to the poorer classes. They are also caught on the coasts of the south of France. They are particularly abundant on the shores of Sardinia, where they are called Sardines, and the inhabitants pickle them and export them in great quantities.

THE ANCHOVY.

The anchovy is about three inches long. Its body is semi-transparent, the fins short, the tail forked, and

the upper jaw longer than the under. It is chiefly found in the Mediterranean; but it has also been met with on the British coasts. In colour, it resembles the sprat, but it is infinitely superior to it in flavour. After the fish are cleaned, and their heads cut off, they are pickled and packed in small barrels, for sale and for exportation. Anchovy sauce was common among the Romans.

THE TROUT.

The trout sometimes measures eighteen inches in length, and weighs nearly ten pounds. The colours and spots of the trout vary in different waters; but the flesh is usually red, like that of the salmon. It is a very voracious fish, and readily seizes an ordinary bait. Like the salmon, it seeks the sources of rivers in the spawning season, and sometimes makes extraordinary leaps. These fish spawn about the month of December, and deposit their eggs in the gravel at the bottom of rivers and ponds. They feed on river flies, and other water insects.

THE GOLD FISH.

This beautiful and brilliant species, originally brought from China, has been naturalized in this country for nearly 130 years, and now breeds in the English fish-ponds, almost as readily as the common carp. It is, however, chiefly kept in glass vessels, as an ornament to the drawing-room. The colours are brilliant and varied, but the general and predominant hue is a deep gold of the greatest splendour, sometimes shaded with blue, brown, and silvery white. They are very active and lively, continually swimming about and varying their position, and catching at crumbs of bread, or

other food thrown upon the water. They are also very tame, and readily approach the hand that is accustomed to feed them.

THE TENCH.

The tench is considerably smaller than the carp, seldom weighing more than four pounds. Its body is very thick and broad in proportion to its length; the back arched, the fins rounded at the tip, and the tail broad. The general colour is dusky; but the head, sides, and belly are greenish, mixed with gold. Its skin is remarkably slimy. In delicacy of flavour, this fish is considered as second only to the carp. In its habits, it is remarkably stupid, and is very easily caught. This fish, as well as the carp, is extremely tenacious of life.

THE DACE.

The dace is about ten inches long, and of a light colour. This animal is remarkable for having no teeth in its jaw; but in its throat. These fish spawn in March. They are in season for the table about Michaelmas, but improve in quality as the winter advances. This is a very elegant fish; and its motion in the water is extremely sprightly.

THE ROACH.

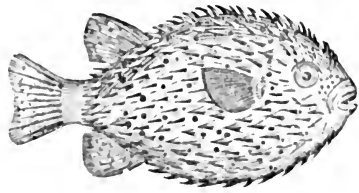
The length of this fish is about nine inches. Its belly and fins are of a bright red colour. It resembles the carp in the form of its scales. The roach is proverbial for the excellence of its flesh, which has a peculiarly delicate flavour.

THE PLAICE.

The plaice has rather a square form, and grows to a large size, especially on the sand-banks in the North Sea, where it has been found weighing no less than fifteen pounds. The body is very flat, and the upper part of the fish is of a clear brown colour, marked with orange spots, and the belly white. The flesh is very soft and insipid.

THE FLOUNDER.

The flounder resembles the plaice, except that it is smaller. The back is of a dark olive colour, spotted; some of them with round, reddish spots on the back and fins. They are reckoned a more delicate fish than the plaice. They are, however, generally eaten by the poorer classes; and are not often served up at the tables of the rich. They are common in the British seas, and the large rivers, into which they are driven by the tide.

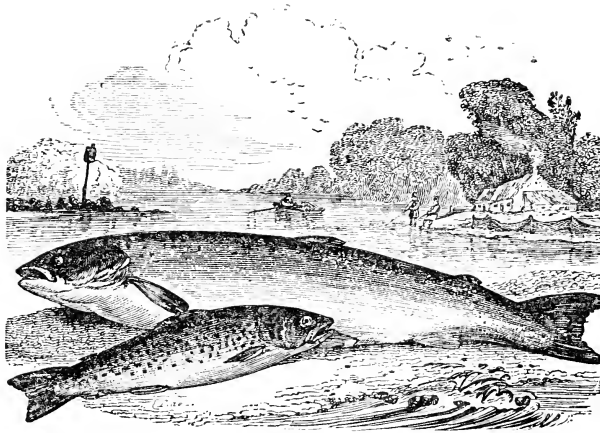


SHELL FISH.

THERE are two kinds of animals inhabiting the water that have commonly received the name of fishes, entirely different from those we have been describing, and also very distinct from each other. These are divided into crustaceous and testaceous fishes. Of the former kind are the crab and the lobster; these have a shell of not quite a stony hardness, but resembling a firm crust, and in some measure capable of yielding. Of the latter kind are the oyster, the muscle, the cockle, and the sea snail, of which there are many varieties. The shell of these latter is extremely hard, very brittle, and incapable of yielding.

THE LOBSTER.

The lobster is an animal of very extraordinary form. It has two great claws, which are its instruments for provision and defence; these, by opening like a pair of nippers, have great strength, and take a firm hold; they are usually notched like a saw, which still more increases their tenacity. Besides these powerful instruments, which may be considered as arms, the lobster has eight legs, four on each side, and these with the tail serve to give the animal its progressive and sidelong motion. Between the two claws, is the animal's head, very small, and furnished with eyes that seem like two black horny specks on each side; and



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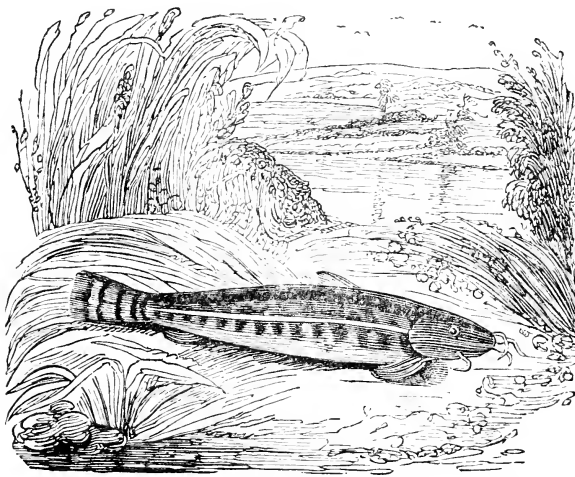


ROACH *Page* 158

these it has the power of advancing out of the socket and drawing in at pleasure. The tail is the chief instrument of its motion, and with this it can raise itself in the water. Under the tail is lodged the spawn in great abundance. This is preserved with great care till it has arrived at maturity, when the young animal drops off into the water, and immediately seeks refuge in clefts and crevices of rocks at the bottom of the sea. In a short time it grows considerably, but as the shell does not grow in like manner, the body bursts the shell and casts it off; and thus the lobster is left for some time in a most defenceless state. But in two or three days it is furnished with a new shell, as hard as that which it just cast aside. When the lobster is completely equipped in its new shell, it may be seen how much it has grown in a few days, for by comparing the old shell with the new one, it will be found that the animal has increased upwards of one-third in size. The lobster changes its shell once every year. At certain seasons of the year these animals never meet each other without an engagement. In these combats, to come off with the loss of a leg or a claw is no great loss, for in a few weeks a fresh one is produced almost as large and powerful as the old one, though it never becomes so large as the other claw; and this is the reason why we sometimes see the claws of lobsters of unequal size. The shell of the lobster is black when taken out of the water, but becomes red by boiling.

The most common method of taking lobsters is in a basket, in which is put the bait and then thrown to the bottom, where the water is not more than thirty or forty feet deep. The lobsters creep into this basket for the sake of the bait, but not being able to get out again, they are thus taken captive.

THE CRAB.

The crab is an animal found equally in fresh and salt water, and also upon land. In shape it differs very much from the lobster, but entirely resembles it in habits. The tail in this animal is not so apparent as in the former, being that broad flap that covers a part of the belly, and which, when lifted up, discovers the spawn situated there in great abundance. It resembles the lobster, in the number of its claws, which are two, and its legs, which are eight, four on each side. Like the lobster it is a bold, voracious animal; and such an enmity do crabs bear to each other, that those who carry them for sale to market often tie their claws with strings, to prevent their fighting and maiming themselves by the way.

The land crab is found in some of the warmer regions of Europe, and in great abundance in all the tropical climates of Africa and America. Of these, some are delicious and nourishing food, others are poisonous; some are not above half an inch broad, others are as much as a foot across; some are of a dirty brown colour, and others beautifully mottled. That called the violet crab of the Caribbee islands, is the most noted, both for the delicacy of its flesh, and the singularity of its habits. These animals live on land, but come down to the sea in the months of April or May, in millions at a time, to deposit their spawn. Under the guidance of an experienced commander they march straight forward, unless compelled by the nature of the country to alter their course. They are commonly divided into three battalions, of which the first consists of the strongest and boldest males, that like pioneers march forward to clear the way. The second detachment consists of females, that never leave the mountains till the rain, which greatly facilitates their

journey, is set in. Three or four days after this, the rear-guard follows, consisting of males and females; but neither so robust nor so numerous as the former. When, after a fatiguing march, they have arrived at their destined port they prepare to cast their spawn. Soon after this they also cast their shells, and in a few days they are covered with new ones. They then make the best of their way back again to the mountains.

THE SHRIMP.

The shrimp is a small fish of the lobster kind. It is found on all the sandy shores of Great Britain, and is considered a great delicacy. It has three legs on each side.

The prawn resembles the shrimp except that it is much larger. Prawns feed on all the smaller kinds of marine plants, which they devour with great voracity. These fish are chiefly found among sea-weed, and among rocks at a little distance from the shore.

THE COCKLE.

Cockles are very common near the mouths of rivers, where they are found buried several inches in the sand. They vary greatly in size, being found from one inch to four or five in diameter. The shape of the shell somewhat resembles a heart, and is marked with longitudinal ribs, a little wrinkled. The colour of the shell is of a whitish brown.

THE OYSTER.

The shells of the oyster, unlike those of the muscle, differ from each other—one being cupped, and the other

flat. On the cupped shell it always rests; for if it should be on the flat side, it would lose all its water. The oyster attaches itself to every object that is near it. Rocks, stones, pieces of timber or sea-weed, all serve to secure it against the agitation of the waves. There is nothing these fish will not stick to; indeed they are often found to stick to each other.

Oysters cast their spawn in May; this has the power of sticking firmly to any hard substance on which it falls. In a few days, it is covered with a shell; and in three years the animal is fit to be brought to market. As they invariably remain in the places where they are laid, and as they grow, apparently without any other food than what is contained in the sea-water, it is the custom at Colchester, and other parts of the kingdom, where the tide settles in marshes inland, to pick up great quantities of small oysters along the shore, and to deposit them in these marshy places.

The oysters, however, which are prepared in this manner, are by no means so large as those found sticking to rocks at the bottom of the sea, and usually called rock-oysters.

The oyster has always been considered as a delicacy, and was highly esteemed by the Romans, especially those that were found in the Lucrine Lake. In England, those obtained near Colchester are considered the best.

THE MUSCLE.

The muscle consists of two equal shells, joined at the back by a strong ligament, that answers the purposes of a hinge. By the elastic contraction of this ligament the animal can open its shell at pleasure. Though the multitude of these fish is very great, yet its enemies are in equal proportion. In order to prevent it from

being dashed about at the mercy of the waves, the muscle is furnished with a great number of threads, which are usually called the beard of the muscle, by which it attaches itself to whatever object it approaches. Wherever it determines to take up its residence, it fixes the ends of its beard, which are glutinous, to the rock or the object, whatever it may be, and thus, like a ship at anchor, it braves all the agitations of the water.

Muscles are often bred artificially, in salt-water marshes that are overflowed by the tide. The fishermen throw them in at the proper seasons, and there, not being preyed upon by their powerful enemies, they cast their eggs, which soon become perfect animals, and are found together in clusters of several dozens together. It requires a year to stock a muscle-bed; and if the number consists of forty thousand, the whole may be taken except one-tenth, which will be found amply sufficient to stock the bed anew. The time for taking the muscles from their beds is from the month of July to October. They are sold at a very moderate price.

THE COMMON SNAIL.

The first striking peculiarity in the snail, is that it has its eyes on the points of its two large horns. The eyes appear like two blackish points. Beneath the two smaller horns is the animal's mouth; and though it may appear too soft a substance to be furnished with teeth, yet it has not fewer than eight of them, with which it devours leaves, and other substances seemingly harder than itself.

When the animal leaves the egg, it is seen with a very small shell on its back, which, as it grows, becomes extremely hard. Whenever it is threatened with

danger it instantly retreats into its shell, waiting till the danger is over. The appetite of these animals is very great, and the damage that gardeners sustain from them makes them employ every method for their destruction. At the approach of winter these animals bury themselves in the earth, where they continue torpid during the winter. At the approach of spring, they come forth from their retreats, and indemnify themselves for their long fast by the voracity with which they devour whatever comes in their way.

The sea-snail, the fresh-water snail, and the land-snail all bear a great resemblance to the common snail.

THE NAUTILUS.

Of all shell-fish the nautilus is, perhaps, the most extraordinary. Its "spreading the thin oar, and catching the flying gale," to use the poet's description of it, is what has chiefly excited human curiosity. These animals, particularly those of the white, light kind, are chiefly found in the Mediterranean. When the sea is calm, they are observed floating on the surface; some spreading their little sail, some rowing with their feet, and others still floating upon their mouths, like a ship with the keel upward. The nautilus is furnished with eight feet, which issue near the mouth, and which are connected to each other by a thin skin. Of these, six are short, and these are held up as sails to catch the wind in sailing; the other two are longer, and are kept in the water and serve as oars. When the weather is quite calm, and the animal is pursued from below, it then expands only a part of its sail, and rows with the rest; whenever it is interrupted, or fears danger from above, it instantly furls the sail, catches in all its oars, turns its shell mouth downwards, and in-

stantly sinks to the bottom. No creature of the deep has more numerous and more powerful enemies than the nautilus. Its shell is scarcely ever found in perfect preservation, bu tis generally seen to bear some marks of hostile invasion. Its little arts, therefore, have doubtless been given it for its preservation; and by its comparative swiftness it is enabled to escape the crab, and other animals of that kind, that lurk for it at the bottom of the sea.

REPTILES.

Most of these animals exhibit but an awkward and unsightly appearance, and in most instances their form is clumsy, their colours not attractive, their motions dull and sluggish, and their manners unpleasant and forbidding; but, on the other hand, there are found among them, species that combine elegance of figure, sprightliness of motion, brilliancy of tint, and vivacity of manners. These animals have been called *amphibious*, because some of them appear to live indifferently on land and in the water; but though most of them swim with facility, and many have their ordinary residence in ponds, lakes, and rivers, a great proportion live on the land alone. They are all more or less remarkable for three properties; namely, the power of suspending respiration for a long time without injury, for a great tenacity of life, and for the long period during which they remain in a torpid or apparently lifeless state. Most of this tribe of animals are inhabitants of warm climates, and a great proportion of them are found only in the torrid zone. A very small number of species appear to be natives of the British Isles.

THE LIZARD.

Of this animal there are many species: of these, what is called the *nimble lizard*, is the most remarkable. It lives entirely on the land, and is frequently seen in

spring, or during fine weather, basking in the sun on a wall, or on a sloping green bank. Its usual length from the nose to the end of the tail is about seven inches, of which the tail makes nearly two-thirds. This part tapers from the root to the extremity, where it ends in a sharp point. This lizard is an elegant little creature, and the most gentle and innocent of all the tribe. Its motions are so nimble, and it runs with such swiftness when disturbed, or in pursuit of prey, that it disappears in a moment. Should any of the small animals on which it feeds appear, it springs on them with inconceivable quickness; and when it perceives the approach of an enemy, it secures its retreat with equal rapidity.

It order to seize the insects on which it usually feeds, the lizard darts out with great velocity its large forked red tongue, which is so beset with red tubercles as materially to assist in catching its winged prey. Like other reptiles, it can subsist for a long time without food. Towards winter it becomes torpid, but revives in the spring, and recommences its sportive evolutions, improving in agility as the warm weather advances. In the beginning of May, the female deposits her eggs at the foot of a wall fronting the south, or in some other warm situation, where they are hatched by the heat of the sun.

THE COMMON BASILISK.

This animal, though it retains the name, is nothing like the fabulous creature of antiquity, which was supposed to be the most malignant of all venomous animals, and whose very glance was said to prove fatal to beholders. This animal is a simple, harmless creature, a native of South America, residing principally among trees, and living chiefly on insects. It is chiefly remarkable for

the curious cap-like projection on the head, which, from being regarded as a crown, occasioned it to be called *basiliscus;* that is, *kingly.* This animal is about a foot and a half long, and of a pale brown colour.

THE CROCODILE.

Of this terrible animal there are two kinds—the crocodile properly so called, and the alligator. The distinctions usually made between the crocodile and the alligator are these: the body of the crocodile is more slender than that of the alligator; its snout runs off tapering from the forehead like that of a greyhound; while that of the other is indented like that of a lap-dog. The crocodile has a much wider swallow, and is of an ash colour; the alligator is black, varied with white, and is thought not to be so mischievous.

The crocodile grows to a great length, being sometimes found thirty feet long, from the tip of the snout to the end of the tail; its most usual length is, however, eighteen feet, of which the tail is about five feet, and the head and neck two feet and a half, and about four feet and a half in circumference, where thickest. The fore legs are short, and the hinder ones about two feet long. The toes are united by a membrane like that which unites those of a duck, only much thicker. The eyes are very small in proportion to the size of the body. This animal has twenty-seven cutting teeth in the upper jaw, and fifteen in the lower, with several void spaces between them: they are thick at the bottom and sharp at the point. The mouth is about fifteen inches in length, and eight in breadth, where broadest. The distance of the two jaws, when opened as wide as possible, is about fifteen inches, and is amply sufficient to take in the body of a man. From the shoulders to

the extremity of the tail, the animal is covered with large scales; and not only so, but it is defended all over with a coat of armour which, however, is not proof against a musket-ball, as has been asserted.

Crocodiles are seen in some places lying for whole days stretched in the sun and motionless, so that a person not used to them might mistake them for trunks of trees, covered with a rough and dry bark. The strength of every part of the crocodile is very great; and its arms, both offensive and defensive, irresistible. The back-bone is jointed in the firmest manner, the muscles of the fore and hinder legs are vigorous and strong; and its whole form is calculated for force. Its teeth are sharp, numerous, and formidable, and its claws long and tenacious. Its tail is so powerful that it can with a single blow overturn a canoe. All crocodiles breed near fresh waters; and though they are sometimes found in the sea, yet that may be considered rather as a place of excursion than abode. They produce their young by eggs. At the end of thirty days they are hatched by the heat of the sun, and are soon able to provide for themselves.

THE SALAMANDER.

The salamander is an animal of the lizard kind. If we suppose the tail of a lizard applied to the body of a frog, we shall have a tolerably good idea of this animal. Unlike the lizard, which is active, restless, and ever in motion, the salamander is a dull, heavy, torpid animal. It is about ten inches long, usually black and spotted with yellow, and when taken in the hand, exciting the sensation of cold in a very great degree. The idle report of its being indestructible in the fire, has occasioned many of these poor animals to

be burnt. Of the salamander there are several species: our water newt, or eft, as it is sometimes called, is of the number.

THE FLYING DRAGON.

The flying dragon is a species of lizard found in the island of Java, where it perches upon fruit trees, and feeds upon flies, ants, butterflies, and other small insects. It flies very swiftly from tree to tree; its skin is variegated with several beautiful colours. This animal is about a foot long; its wings are very thin, resembling those of a flying fish. About the neck is a sort of wattle, not unlike those of a cock, which give it rather an agreeable appearance.

THE CAMELEON.

Like the crocodile, this animal proceeds from an egg, and it also greatly resembles that formidable creature in form: but differs as much as possible in its size and appetites; being not above eleven inches long, and delighting to sit upon trees, which are its place of refuge from the serpents, from which it is unable to escape when on the ground.

The head of a large cameleon is nearly two inches long, and the body four and a half: the thickness of the body is different at different times; for it can blow itself out, and contract itself at pleasure. The colour of the cameleon when at rest in a shady place is of a bluish grey, interspersed with pale red and yellow. But when the animal is removed into the sun, then comes the wonderful part of its history. At first, it appears to suffer no change of colour, its greyish spots still continuing the same; but the whole surface soon

seems to imbibe the rays of light; and the simple colour of the body changes into a variety of beautiful hues. Wherever the light comes upon the body, it is of a tawny brown; but that part of the skin on which the sun does not shine, changes into several brighter colours, pale yellow or vivid crimson; which form spots of the size of half a finger in length. When the sun has done shining, the original grey colour returns by degrees, and covers all the body. Sometimes the animal becomes covered all over with brown spots of a greenish cast; at other times, it becomes of a beautiful green colour, spotted with yellow.

THE TORTOISE.

All tortoises, in their external form, pretty much resemble each other; their outward covering being apparently composed of two great shells, the one laid upon the other, and only touching at the edges: however, when we come to look more closely, we find that the upper shell is composed of no fewer than thirteen pieces, which are laid flat upon the ribs, like the tiles of a house, by which the shell is kept arched and supported. The tortoise has but a small head, with no teeth, having only two bony ridges in their place, notched like a saw, and very hard. These serve to gather and grind its food; and such is the amazing strength of its jaws, that it is impossible to open them when they are once fastened. Indeed this animal is possessed of equal strength in all the other parts of its body; the legs, though short, are extremely strong. The tortoise also, though very slow, moves much faster than the turtle: the tortoise, if thrown upon its back, can, by rocking and balancing its body, at last turn itself upon its face again; but the turtle, when once turned, continues unable to move from the spot.

The tortoise is found from one foot to five feet long, and from five inches to a foot and a half across the back. It has a small head, resembling that of a serpent, and a strong scaly tail, like that of a lizard. Under the great pent-house of its shell, the animal can put out and hide its head at pleasure, and is thus secure from the attacks of every animal.

The usual food of the tortoise consists of vegetables, and it seldom eats snails and worms, but when other food is not to be found. During the winter, the tortoise remains torpid, nor is it awakened from this dormant state till the genial return of spring. When the female tortoise prepares to lay, she scratches a slight hole in the earth, generally in a warm situation, where the beams of the sun have their full effect; there she lays her eggs, and leaves them to be hatched by the heat of the sun. In about twenty-six days the young tortoises are generally excluded. No sooner have they left the egg than they are able to seek their provision, entirely self-taught. The shell with which they are covered, as soon as they are hatched, expands and grows larger with age; and as it is composed of a variety of pieces, they are all capable of extension at their sutures, and the shell admits of increase in every direction. In this respect it differs from the lobster, whose shell is composed all of one piece; which, when the tenant is too big for its habitation, must burst the shell and get another. It is very common to take these animals into gardens, as they are thought to destroy insects and snails in great abundance. The tortoise is extremely tenacious of life, having been known to live for many days after its head was cut off. It is no less remarkable for its longevity; one that was kept in the garden of Lambeth Palace being known to have lived upwards of one hundred and twenty years.

THE TURTLE.

The turtle is generally larger than the tortoise. The great Mediterranean turtle is the largest of the kind with which we are acquainted. It is found from five to eight feet long, and from six hundred to nine hundred pounds weight; but, unfortunately, it is of little or no use, as its flesh is unfit for food.

But of all kinds of turtle, that called the green turtle is the most noted, and the most valuable. The delicacy of its flesh and its nutritive qualities were, for above a century, known only to our seamen and the inhabitants of the coast where they were taken. At present, the turtle is very well known among us, and is become the favourite food of epicures. This animal is generally found about two hundred weight; though there are some that do not exceed fifty pounds.

This animal seldom comes from the sea, except to deposit its eggs. Its chief food is a submarine plant, that covers the bottom of several parts of the sea, not far from the shore. At the time of breeding, they are seen to forsake their former haunts and food, and sometimes to take a voyage of nine hundred miles to deposit their eggs on some favourite shore. When the female has done laying her eggs, she covers the hole so dexterously that it is no easy matter to find the place. She then returns to the sea, and leaves her eggs to be hatched by the heat of the sun. In about twenty-five days the eggs are hatched, and the young turtles, being about as big as quails, are seen bursting from the sand, and going directly to the sea.

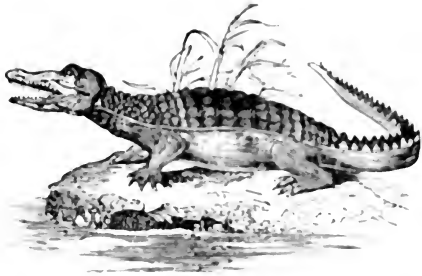
As at their outset to the shore for the purpose of breeding the turtles are fat and in good condition, it is then that the men whose business it is to take them prepare to catch them. For this purpose, they let her proceed to her greatest distance from the sea, and when

she is most busily employed in scratching a hole in the sand, they sally out and surprise her. The manner is to turn her on her back, which utterly disables her from moving; and yet, as the creature is very strong, and struggles very hard, it is no easy matter for two men to turn her over. When thus secured, they go to the next, and in this manner, in less than three hours, they have been known to turn forty or fifty turtles, each of which weighs from a hundred and fifty to two hundred pounds. The lean of the green turtle tastes and looks like veal; the fat is as green as grass, and very sweet. Their introduction into England does not appear to have taken place much above a hundred or a hundred and twenty years. They are common on the coasts of Jamaica, and the other West India islands.

THE FROG.

Both the frog and the toad can live several days under the water without any danger of suffocation. The chief difference between these animals, is that the frog moves by leaping; the toad crawls along the ground. The frog is, in general, less than the toad; its colour is brighter, and its body is smoother: the toad is of a dark brown colour, rough and dusky; the frog is light and active, and the toad slow and sluggish.

The frog is the best swimmer of all land animals. The male frog is usually of a greyish brown colour; the female more inclining to yellow, speckled with brown. A single female produces from six to eleven hundred eggs at a time. In about twenty-one days the egg is seen to open a little on one side, and the beginning of a tail to peep out, which becomes more and more distinct every day. About two weeks after this, the animal begins to move about; and in about three



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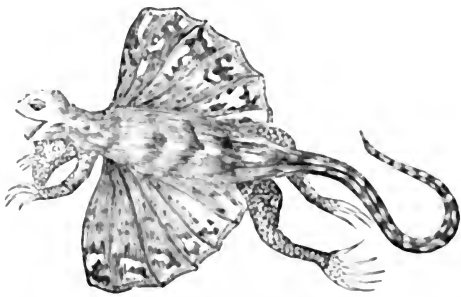

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months after the eggs are laid the little animal arrives at perfection. Before this period it is termed a tadpole.

The frog lives for the most part out of the water, but when the cold nights begin to set in, it returns to its native element, always choosing stagnant waters, where it can lie, without danger, concealed at the bottom. In this manner it continues torpid, or with but very little motion, all the winter. At the approach of spring, the frog is roused from a state of slumber to a state of enjoyment. This animal lives upon insects of all kinds; but it never eats any except those that are alive. It continues fixed and immoveable till its prey appears; and when it comes sufficiently near, it jumps forward with great agility, darts out its tongue, which is furnished with a glutinous substance, and whatever insect it touches, adheres to it, and is thus held fast till it is drawn into the mouth.

The frog is able to bear hunger a very long time; nor is it less tenacious of life. The croaking of frogs is well known; that of the frogs of Holland is loud beyond what one would imagine, being heard at the distance of three miles. In the spring, especially, their croaking is so very loud, that it becomes extremely troublesome to all in the neighbourhood. Before rain, also, their voices are in full exertion, and they are then heard with unceasing assiduity, welcoming the coming shower. Indeed no barometer is ever more certain than the frog is, in foretelling an approaching change of weather.

THE TOAD.

The toad has long lain under the imputation of being a noxious and venomous animal, but nothing is more false than this prejudice, for it is as harmless and inoffensive as the frog. As the toad bears a general

resemblance to the frog, in outward appearance, so it resembles it in its nature and appetites. Like the frog the toad is amphibious; like that animal, it lives on worms and insects, which it seizes in like manner, by darting out its tongue. When, like the frog, they have undergone all the variations of the tadpole state, they forsake the water, and are often seen, in a damp summer's evening, crawling about by thousands from fenny places. Like the frog, the toad is torpid in the winter; it then chooses for its retreat either the hollow root of a tree, the cleft of a rock, or sometimes the bottom of a pond, where it is found in a state of seeming insensibility.

The most surprising stories have been told respecting the toad. Instances are related of its living for centuries lodged in the bosom of a rock, or in the body of an oak-tree, without the smallest access on any side for nourishment or air, and yet taken out alive and perfect.

Of this animal there are several varieties, such as the water and the land toad, which probably differ only in the colour of their skin; the water toad inclining more to ash colour, with brown spots, the other being of a very dark brown. The size of the toad with us is about three inches long, but in the fenny countries of the continent they are much larger, being not less than a common crab. In the tropical countries they are upwards of eight inches long, and many of them are beautifully streaked and coloured; some studded over as with pearls, others bristled with horns or spines; some have the head distinct from the body, while others have it so sunk in, that the animal appears without a head. All these are found in the tropical climates in great abundance, and particularly after a shower of rain, for then the streets are entirely covered with them.

SERPENTS.

SERPENTS chiefly abound in those countries where the climate is hot and damp. Hence all along the swampy banks of the river Niger, or Oronoco, the serpents cling among the branches of the trees in infinite numbers, and carry on unceasing war against all other animals in their vicinity.

We ought not then to reject as entirely fabulous the accounts left us by the ancients, of the terrible devastations committed by a single serpent. We are told by them, that while Regulus led his army along the banks of the river Bagrada, in Africa, not far from the Great Desert, an enormous serpent disputed his passage over it. Pliny, who states that he himself had seen it, says that it was one hundred and twenty feet long, and that it had destroyed many of the soldiers. At last, however, the battering engines were brought out against it, and, there attacking it at a distance, it was soon destroyed.

If we take a survey of serpents in general, we shall find that they have marks by which they are distinguished from all other animals. They have the length and suppleness of the eel, but are without fins to swim with; they have scales like a lizard, but are destitute of legs to walk with; they have the crawling motion of the worm, but, unlike that animal, they have lungs to breathe with. All serpents have a very wide mouth, compared to the size of the head, and, what is very extraordinary, they can swallow the head of another

animal which is three times as big as their own. This they are enabled to do, as their jaws are not held together by bones, but by a muscular skin, which has very expansive powers.

In all serpents the teeth are crooked and hollow, and, by a peculiar contrivance, they are capable of being erected or depressed at pleasure. The eyes are small when compared with the length of the body, and, though differently coloured in the different species, yet they all have a malignant and heavy appearance. The tongue in all these animals is long and forked, and is composed of two long fleshy substances, terminating in sharp points. Serpents are amphibious, being capable of living both on land and in the water; they are also torpid during the winter, like the bat and the lizard.

As the body of this animal is long, slender, and capable of bending in every direction, so the number of joints in the back-bone is very numerous, amounting to no fewer than one hundred and seventy, giving it a surprising degree of pliancy. The skin also materially assists its motions, being composed of a number of scales, closely united to each other by a transparent membrane, which grows harder as the animal grows older, and which he generally changes twice in the year.

When we compare serpents with each other, the first great distinction appears in their size, varying from thirty-six feet to three inches. In the East Indies they grow to an enormous magnitude, particularly in the island of Java, where it is said that one of them will devour a buffalo. We have an account of a combat between an enormous serpent and a buffalo, by a person who was a spectator of it. The serpent had been for some time waiting near the brink of a pool in expectation of its prey, when a buffalo was the first that offered. Having darted on the affrighted animal,

it instantly began to entwine it with its voluminous folds, and at every twist the bones of the buffalo were heard to crack, almost as loud as the report of a cannon. It was in vain that the poor animal struggled and bellowed; its enormous enemy held it too fast for it to be able to get free; till, at length, the whole body being reduced to one uniform mass, the serpent prepared to swallow it. This it did by licking it all over; it then began to swallow that end which offered the least resistance; its body in the mean time dilating to that degree that it became three times its usual thickness. Whenever any of the serpent kind have thus gorged themselves, they become for some time torpid, and may be approached with safety, as they can make scarcely any resistance.

In those burning countries where the sun dries up every brook for hundreds of miles round, a river that is never dry is regarded as one of the greatest blessings. Hither all animals repair, both of the peaceful and the hostile kinds; the former to quench their thirst, and the latter to seize their prey as soon as it approaches. Not an hour passes without some tremendous conflict; but the serpent, defended by its scales, is of all others the most formidable.

As to the sounds these animals utter, hissing is that which they most commonly send forth, either as a call to those of their species, or as a threat to their enemies. With respect to motion, some serpents, particularly those of the viper kind, move slowly; others dart forward with great swiftness. The motion of all is similar; it is performed by advancing the head, then drawing up the tail behind, and bending the body into a bow; then from the spot where the head and tail were nearly contiguous advancing the head forwards as before. This is very different from that of the earthworm. This latter, in order to move forward, lengthens the

body, then by the forepart it clings to the ground; it next contracts its body, and brings it forwards, and then again lengthening it, advances as before.

Though all serpents are amphibious, yet some are much fonder of the water than others; and, though destitute of fins or gills, they remain at the bottom, or swim along the surface with the greatest ease. They can, however, only live in fresh water, for salt is particularly injurious to them. Most serpents have an extremely unpleasant smell, which materially serves to defend them, since most animals avoid them on that account, especially as this scent becomes much more disagreeable when they are provoked or attacked. Those that are the most venomous, are, however, free from this unpleasant smell.

Some serpents bring forth their young alive, as the viper; the majority, however, lay eggs, which are hatched by the heat of the sun. But the most material circumstance for us to be acquainted with respecting serpents, is, which of them are venomous, and which innoxious. Not more than one tenth part of them are furnished with poison. Of this kind are the viper, the rattle-snake, the cobra di capello, and the asp. From these noxious qualities of serpents, it is no wonder that not only man, but beasts and birds carry on an unceasing war against them. The ichneumon of India, and the peccary of America, destroy them in great numbers. These animals have the art of seizing them near the head, and thus avoid all danger from their bite. The vulture and the eagle also prey upon them, and falling on them from a height in the air, they carry them off writhing and struggling; and terrible combats sometimes take place between them.

Many among the ancients were noted for charming and destroying these animals. Some moderns also

pretend to this art. Casaubon says, that he knew a man who could at any time summon no fewer than a hundred serpents together, and draw them into the fire. The method the Indians make use of to charm serpents is as follows; they take a scarlet robe, embroidered with golden letters, and spread it before a serpent's hole. The golden letters, as they say, have a fascinating power, and by looking steadfastly on them, the serpents' eyes are overcome and laid asleep.

Though the generality of mankind regard this formidable race with horror, yet there have been, and still are, some nations that consider them with respect and veneration. The adoration paid by the ancient Egyptians to the serpent is well known: and many of the nations, at present, along the western coast of Africa, retain the same unaccountable veneration.

The poison of serpents has always been a matter of serious consideration and importance to mankind, but especially so to those who live where they abound. In all serpents that are venomous, there are, besides the teeth common to them all, two large teeth or fangs, that issue from the upper jaw, one on each side, and that hang out beyond the lower jaw. The glands that serve to supply these fangs with poison are situated on each side of the head, behind the eyes, and have their canals or ducts leading from thence to the bottom of the fangs, from whence they empty into a kind of bladder, from which the fangs on each side are seen to grow. The fangs are hollow within, and have an opening towards the point, like the slit of a pen, through which, in the act of seizing its prey, the venom issues, and is injected into the wound, and though the quantity of venom is a drop not larger than a pin's head, yet without a proper remedy, death inevitably ensues.

THE VIPER, OR ADDER.

Vipers are found in many parts of this island; but dry, stony, and particularly chalky countries abound with them. This animal seldom grows to a greater length than two feet, though sometimes it is found above three. The ground colour of the body is a dirty yellow; but that of the female is deeper. The back is marked throughout the whole length with a series of black spots; and the belly is entirely black.

The viper differs from most other serpents, in being much slower, and also in producing its young alive. This animal is capable of supporting very long abstinence, some of them having been kept for six months without food, and that too without seeming to suffer in consequence. They are usually caught with wooden tongs, by the end of the tail, which may generally be done without danger: yet, notwithstanding this precaution, the viper-catchers are occasionally bitten by them: but, by the application of olive oil, the bite is effectually cured.

The following surprising account is related of a viper-catcher of Bath, of the name of Oliver. This man, in the presence of a great number of persons, suffered himself to be bitten by an old viper upon the wrist and joint of the thumb of the right hand, so that drops of blood came from the wound; he immediately felt a violent pain, both at the top of his thumb and up his arm, even before the viper was loosened from his hand; soon after he felt a pain, resembling that of burning, trickle up his arm; in a few minutes his eyes began to look red and fiery, and to water very much; in less than hour, he perceived the venom seize his heart with a pricking pain, which was attended with faintness, shortness of breath, and cold sweats; in a few minutes after this, he began to feel very great pains in his

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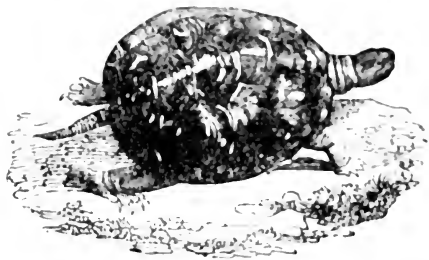
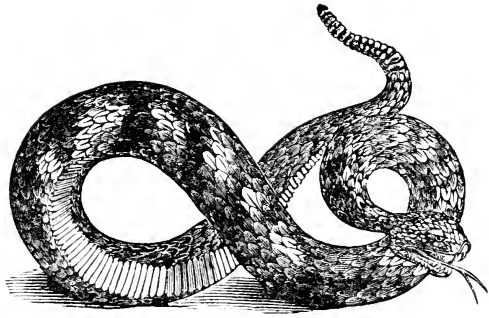
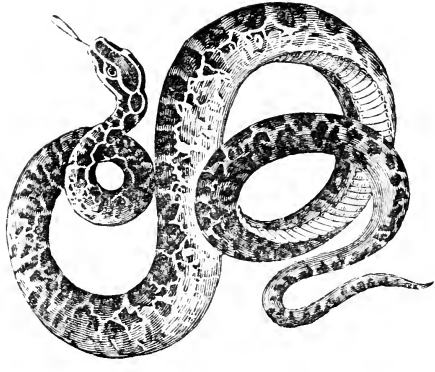


TORTOISE *Page* 173

TOAD *Page* 177



RATTLE SNAKE *Page* 185



BOA CONSTRICTOR *Page* 189

stomach and back, attended with violent fits of sickness. About an hour and a quarter after he was first bitten, a chafing dish of hot charcoal was brought in, and his naked arm was held over it, as near as he could bear it, while his wife rubbed in the olive oil with her hand, turning his arm continually round. Little or no benefit arising from this, he was put to bed, and on taking a glass or two of olive oil, he felt considerably relieved. His arm was then again bathed over a pan of charcoal, and rubbed with olive oil, heated in a ladle over the charcoal. From this last operation he felt immediate relief, and, soon after, he fell into a profound sleep; and, after about nine hours sound rest, he awoke, at six o'clock the next morning, and found himself very well; but in the afternoon, on drinking some rum and beer, so as to be almost intoxicated, the pain and the other bad symptoms returned, which soon abated on rubbing the arm with olive oil as before.

The viper is most commonly seen, in the fine days of spring, about nine or ten o'clock in the morning, basking in the sun near a bush, and within easy reach of its retreat. It is more seldom seen during the heats of summer. It subsists on small quadrupeds—as mice, and moles, and reptiles, lizards, frogs and toads, and on birds, arresting them by its formidable bite, and swallowing them when killed, beginning with the head.

The flesh of the viper was formerly in high esteem, as a restorative, and was prescribed for a great variety of maladies; but, in this country at least, it is now rarely if ever recommended, by the medical profession.

THE RATTLE-SNAKE.

The rattle-snake is a native of America, and is not met with in any part of the Old World. Some are as

thick as a man's leg, and six feet in length; but the usual size is from four to five feet. In most particulars it resembles the viper; like that animal, having a large head and a small neck, being of a dusky colour, and furnished with fangs, that inflict terrible wounds. The eye also is furnished with what is called a nictating membrane, that preserves it from dust; and its scales are of a considerable degree of hardness. They are of an orange, tawny, and blackish colour, on the back, and of an ash colour on the belly. The male may be readily distinguished from the female, by having a black velvet spot on the head, and by the head being smaller and longer. But that which distinguishes them from all other animals is their rattle, an instrument lodged in their tail, by which they make a loud rattling noise when they move.

The certain death which ensues from this terrible creature's bite makes a kind of solitude wherever it is heard. It moves along with the most majestic rapidity; neither seeking to offend the larger animals, nor fearing their insults. If unprovoked, it never meddles with anything but its natural prey; but when accidentally trod upon, or pursued, it then makes a desperate resistance. It erects itself upon its tail, throws back its head, and inflicts a wound in an instant. As soon as the wound is inflicted the pain is intolerable, and grows more violent every moment; the limb swells, the venom reaches the head, which soon becomes of a monstrous size; the eyes are red and fiery; the heart beats quick with frequent interruptions; the pain becomes insupportable, and some expire under it in five or six hours; but others, who are of stronger constitutions, survive the agony for a few hours longer, only to sink under a general mortification, which immediately ensues.

Several remedies have been tried to alleviate the bite

of this animal: a decoction of the Virginian snake-root is considered as the most effectual. The bite is, however, generally fatal.

The rattle-snake is said to have the power of charming its prey into its mouth. It often basks at the foot of a tree, where birds and squirrels make their residence. There, coiled upon its tail, its jaws extended and its eyes shining like fire, the rattle-snake levels its dreadful glare upon one of the little animals above. The bird, or the squirrel, too plainly perceives the mischief intended against it, and hops from branch to branch with a timorous, mournful sound, wishing to avoid, yet incapable of breaking through the fascination; descending lower and lower towards the bottom branches of the tree, until, at last, overcome by its fears, it jumps down from the tree into the mouth of its destroyer.

In some districts of America the rattle-snake is regarded with religious veneration by the natives; but, in others, it is used as an article of food, being cooked as we do eels. The flesh is white, and is said to be well-tasted.

THE ASP.

The asp sometimes measures four or five feet, but it is, in general, much smaller. It is one of the most venomous of the whole serpent tribe. It is covered with small round scales, and is of a greenish colour, inclining to brown. It is said, that unless timely assistance is given, those who are bitten by it die in three hours after the wound is inflicted. It was this animal that Cleopatra, Queen of Egypt, made use of to put herself to death.

THE COBRA DI CAPELLO.

The cobra di capello, or hooded serpent, or, as it is sometimes called, the spectacle-snake, inflicts the most deadly and incurable wounds. Of this formidable creature there are five or six different kinds, but all equally dangerous, and their bite is followed by speedy and certain death. It is from three to eight feet long, with two large fangs hanging out of the upper jaw. It has a broad neck, and a mark of dark brown on the forehead, which looks like a pair of spectacles. The eyes are fierce, and full of fire; the head small, and the nose flat. The usual colour of this animal is a pale brown above, and the under parts bluish white, sometimes slightly tinged with yellow. It is a native of India, where it is far from uncommon. It is an object of superstitious veneration among the Hindoos, who seldom mention it without adding some respectful epithet, as the royal, the good, or the holy.

Of the virulence of the venom of this serpent an instance is related by J. Williams, Esq., in the second volume of the "Asiatic Researches:"—"In July, 1782, a woman in Chunar, in the East Indies, was bitten by a cobra di capello, between the thumb and fore-finger of the right hand. Prayers and superstitious incantations were practised by the Brahmins about her, till she became speechless and convulsed, with locked-jaw, and a profuse discharge of saliva running from her mouth. On being informed of the accident, I immediately sent a servant with a bottle of volatile caustic alkali spirit, of which he poured about a tea-spoonful, mixed with water, down her throat, and applied some of it to the part bitten. The dose was repeated a few minutes after, when she was evidently better, and in about half an hour was perfectly recovered."

THE BOA CONSTRICTOR.

This animal is among serpents what the elephant is among quadrupeds, by far the largest of its tribe, as it measures from forty to fifty feet in length, and sometimes attains to the thickness of an ordinary man. Its head is rounded and covered with scales resembling those on the back. The mouth is so large that it can admit the head of a man, a stag, or even a buffalo. The teeth are as strong as those of a large dog. The number of plates on the belly is about two hundred and forty; and two rows of large hexagonal scales are disposed on each side of them. Those on the back have a similar form, but are more regular, and very small. The tail, which is about a tenth part of the whole length, is very hard and muscular, and furnished with nearly sixty plates. The shades of this animal's colours are much varied, and very pleasingly distributed. The head is marked by a large black or reddish spot, which is frequently in the form of a cross. Of the other spots, which are disposed with the greatest symmetry on the back, some are of a gold colour, edged with brown, and others are of a chestnut hue, or of a very lively red, with dots at intervals. The under part of the body is of a yellowish ash colour, marbled, or spotted with black.

The boa constrictor has no poison fangs, and, unless when stimulated by the calls of hunger, it indulges in sluggish repose, in caverns, tall grass, or jungles. When roused, however, by the importunate cravings of hunger, it darts from its place of concealment with the rapidity of an arrow, as soon as it espies its prey. Monkeys, deer, and antelopes are often sacrificed to its voracity; and even the lion, the tiger, and the buffalo have been entwined in its voluminous and powerful folds. "How, indeed," to adopt the elegant language

of Latreille, "is it possible to oppose resistance to an animal forty feet in length, which coils round you, applies so closely the surface of its body to your own, squeezes you with muscles so rigid in almost every point, paralyses all your strength, by precluding the action of your arms, hands, and feet, and consequently of the weapons which nature or art has put in your power? How is it possible not to be stifled, crushed, and ground down by the power of so many levers, which act on all parts of your body? Add to this," continues he, "that you are in the focus of a pestilential atmosphere, the breath of the serpent corrupting to a great degree the surrounding air; that your imagination, terrified at the sight of this monster, whose throat is gaping, which displays before you its large teeth, which spreads on you a frothy and fœtid slime, deprives you of the resources with which reflection might furnish you; and, as if this terrible aggressor had not of himself sufficient strength for your destruction, he makes use of trees and blocks of stone, that happen to be within his reach, as points of support, the more readily to crush you between his folds."

If the boa constrictor misses its prey at the first spring, nothing can stop its pursuit; for it rushes forward with the greatest velocity, clears with a bound a considerable space, swims like a fish, and climbs to the tops of the loftiest trees. It is said to be particularly fond of the flesh of negroes, whom it sometimes swallows alive. Before attempting to swallow the larger animals, it lubricates them with a mucilagenous liquor, kneads and draws them out into as great a length as possible. The hardest bones crack under its pressure, and the mouth and throat will receive substances that are three times their ordinary dimensions. After having swallowed its prey, it is deprived of its usual agility

and falls into a state of drowsiness for days together, when the negroes, who consider it a dainty fare, despatch it without hazard. Yet this animal is an object of their worship, as it was that of the ancient Mexicans. The eggs are very small in proportion to the size of this animal, measuring only two or three inches in diameter.

THE COMMON, OR BLACK, SNAKE.

The black snake is the largest of all English serpents, sometimes exceeding four feet in length. The neck is slender; the middle of the body thick; the back and sides are covered with small scales of a dusky brown colour; the middle of the back is marked with two rows of small black spots; the belly is of a dusky colour; the scales on the sides are of a bluish white, the teeth are small and serrated. The whole species is perfectly inoffensive, taking shelter in dunghills, and among bushes in moist places, from whence they seldom remove, except to bask in the sun.

This snake preys upon frogs, insects, worms, mice, and young birds. The black snake of Virginia, which is larger than ours, generally growing to six feet in length, swallows prey proportionable to its size, partridges, chickens, and young ducks. It is generally found in the neighbourhood of the hen-roost, and will devour the eggs, even while the hen is sitting on them.

The whole of this tribe is oviparous, laying about eighty or a hundred eggs at a time, in dunghills or hot-beds, the heat of which brings them to maturity. During the winter they lie torpid, in hedges and under old trees.

THE BLIND WORM, OR COMMON SLOW WORM.

This animal, which is also sometimes called the glass-snake, is of a yellowish ash colour, its sides streaked with black and white. Its length varies from a foot to a foot and a half. The idea of its being blind is totally incorrect, for it has large and sparkling eyes. This snake is of common occurrence in Europe, Africa, and the north of Asia. It is perfectly harmless, living on worms and insects, and is itself in turn devoured by other snakes, birds, and hedgehogs. Like all the rest of the kind, these animals lie torpid during the winter, and are sometimes found in vast numbers twisted together.

THE AMPHISBAENA.

The amphisbaena is remarkable for moving either the head or tail foremost, whence it has received its name, the word amphisbaena being a Greek word, signifying *moving both ways;* and hence it was vulgarly thought to have two heads. It is as thick at one end as at the other, and the colour of the skin is rough, hard, and variously spotted. Some have affirmed that its bite is dangerous, but this is a mistake, as it is without the fangs which are the characteristics of the venomous kind.

THE LIBOYA, OR GREAT SNAKE OF JAVA.

This snake is of a greenish brown, with a purplish tinge, mixed with yellow and black. It is met with in the woody and swampy grounds of Java, but it sometimes advances near the huts of the natives, and makes

great havoc among the poultry, when no larger animals fall in its way; for it can destroy, by the force of its muscular folds, deer, sheep, and goats, which it gorges entire. It frequently measures twenty feet in length, and men and women have sometimes fallen a prey to its rapacity. Of a male of this species, which was eighteen feet long, and eighteen inches in circumference, the following particulars are related by Mr. Abel, in his "Narrative of a Journey in the Interior of China."

"This animal, though permitted, when I saw him at Batavia, to leave his cage, and go into an open space, was seldom disposed to avail himself of this liberty, and it was often necessary to drag him out, and to irritate him repeatedly, before he could be induced to move. He would then stretch himself to his greatest extent, and without throwing his body into any curve, glide closely, slowly, and silently along the ground; and, as he so exactly resembled the colour of the soil, over which he was passing, he might easily have been overlooked. Whilst at full length, he might be approached with safety, as he had not then the power of darting; but when he reared himself on his folds, and put his head into a vibratory motion, he had the greatest command of his powers, and exhibited the most threatening aspect. This attitude he usually assumed after he had been some time from his cage, and all who were near him involuntarily drew back. A live duck being brought to him, he felt it for a moment with his forked tongue, and then seizing it by the breast, he endeavoured to wind his folds about its body; but as this was too small to suffer from their compression, he threw the weight of one of his folds upon its neck and strangled it. When it was dead, he gradually withdrew himself, and taking it head foremost into his mouth, sucked it down his throat. But

this was only a mouthful to him; a goat being his usual meal. While on board the Cæsar, he swallowed two of these animals at an interval of a month from each other. As soon as the goat was within his reach, he raised his head above his coils, and having contemplated his prey for a few seconds, he felt it with his tongue. The goat did not appear to be much alarmed, as he examined the snake very closely, smelling him over with great deliberation. The snake, having withdrawn his head a short distance, made a sudden dart at the throat of the goat, who received him on his horns, and obliged him for an instant to retreat. He then made a sudden dart, and, seizing the goat by the leg, pulled it violently down, and instantly entwining himself round its body, squeezed it with all his force. The goat was eight minutes dying, but was so entirely overwhelmed by the power of the snake that it could not even struggle.

"The snake did not attempt to change his position for some minutes after the goat was dead. At length he gradually slackened his folds, disengaging them with great caution, as if to ascertain whether the goat had any power of motion. He then prepared to swallow it, by placing himself opposite to its head, and feeling it with his mouth. He next proceeded to draw its head into his mouth, but this was no easy task. Having at length succeeded in this, he next grappled with the shoulders, which he also at last succeeded in swallowing. The rest of the body he very easily overcame. He was upwards of two hours in swallowing the whole animal. After thus satisfying his hunger, he remained in a torpid state for several days, from which nothing could rouse him for a considerable time."

INSECTS.

No part of natural history is more extensive or more inexhaustible than that which relates to insects, or, as it is generally called, entomology. Scarcely any place can be pointed out that does not abound with insects. The air, the earth, and the waters, swarm with them. To determine the number of species is impossible, as the habitations of thousands are unknown or inaccessible. Their variety, indeed, and beauty, are almost infinite. Some shine resplendent in a coat of mail, formed of plates that appear like burnished gold or silver; or bedecked with spots and prominences that might easily be mistaken for pearls and precious stones. Some are painted in all the vivid tints that bloom in the most beautiful flowers, or decorate the plumage of the feathered race; while others are clad in a dark garb, and show such a lurid aspect as to be more disgusting than the most hideous reptile. Some are covered with hair, some with feathers; many tribes are defended with a coat of leather; and several with hard and horny substances. Some are armed with horns, some with fangs; while others are furnished with a formidable sting, accompanied with a venomous liquor. Although the insect tribes are among the smallest of nature's works, they by no means rank among her most insignificant productions. Indeed, nothing can be conceived more exquisite than the forms, colours, proportions, and symmetry of the various organs of an insect, when seen through a microscope. By the aid of this

instrument, the down of a butterfly's wing will prove to be composed of numberless scales and feathers, arranged in the nicest order; the body of a common fly will appear studded with brilliant points, and beset with shining bristles; the wings of the dragon fly resemble the finest lace, and its eye is found to consist of a thousand transparent lenses. How nicely is every organ adapted to the use for which it is designed! Jaws for cutting and tearing their food, saws and augers for dividing and penetrating bodies, pincers for holding their prey, trunks for sucking up the juices of flowers, hooks for attaching themselves to the objects on which they feed, are found in the various species.

In examining into the insect tribe, the first animals that offer themselves are those which are destitute of wings, and that appear crawling about on every plant. Those that never have wings, but creep about till they die, may be considered as forming the first order of insects. All these, except the flea and the wood-louse, are produced from eggs; and when once they have broken the shell, they undergo no farther change, but continue to grow larger till they die.

The second order of insects consists of such as have wings, but which, when produced from the egg, have their wings cased up in such a manner as not to appear. This casing-up of the wings does not impede the animal's motion in running or leaping; but when the case bursts, all its motions become more extensive, and the animal arrives at perfection. Thus, the grasshopper, the dragon-fly, and the ear-wig have their wings at first bound down; but when the skin that kept them confined bursts, they are then expanded, and the animal's enjoyments are proportionably increased.

The third order of insects is of the moth and butterfly kind. These have all four wings, each covered with a mealy substance of various colours which, when

handled, comes off upon the fingers, and if examined by the microscope, will appear like feathers, with which the wing is nicely embroidered all over. These insects undergo several changes: being first in the egg state, then in the caterpillar, next in the aurelia or chrysalis state, and lastly, bursting forth into its perfect state of moth, or butterfly.

The fourth order consists of those winged insects which come from a worm instead of a caterpillar, and yet go through those changes which moths and butterflies undergo. Some of these are furnished with only two wings, and others with four. The wings of all these differ from those of the butterfly and moth kind, by not having the mealy substance with which the others are covered. In this order we may place the numerous tribes of gnats, beetles, bees, and flies.

It will now be necessary to give a short account of the various changes which most insects undergo, beginning with them in their caterpillar state.

Caterpillars may be easily distinguished from worms or maggots, by the number of their feet, and by their being changed either into butterflies or moths. They have feet both before and behind, which not only enable them to move forward, but also to climb up vegetables, and to stretch themselves out to take their food. They have from eight to sixteen feet; and in this they differ from the worm or maggot kind, which never have so many. When the animal has continued for a certain time in this state, it discontinues eating, makes itself a kind of covering or husk, in which it remains wrapped up, seemingly without life or motion, and, after having continued for some time in this state, it bursts its confinement, and becomes either a moth or a butterfly.

During winter, the greatest number of caterpillars are in the egg state, and in this lifeless situation they

brave all the rigours of the climate; but at the approach of spring they burst forth from their shell, and find abundance of suitable food already provided for their subsistence. There is scarcely a plant that has not its own peculiar insects, and some are known to support several of different kinds. Of these, many are hatched from the egg at the foot of the tree, and climb up to its leaves for subsistence; the eggs of others have been glued by the parent butterfly to the leaves, and they are no sooner excluded from the shell than they find themselves in the midst of plenty.

As the caterpillar increases in magnitude, it becomes exceedingly voracious; and will eat a quantity of leaves, double its own weight, in a single day. One may be amused with observing the avidity with which they eat: some are seen eating the whole day, others have their regular hours of repast; some eat principally during the night, others during the day.

The body of the caterpillar is composed of rings nearly circular, and generally twelve in number. Its head is connected to the first ring by the neck, which is so short that it is scarcely visible. Caterpillars have for the most part six small black spots, placed on the circumference of the fore-ring, and a little to the side of the head. Three of these are larger than the rest, and are convex and transparent, and are supposed to be eyes. But the parts which most deserve our attention are what are called the stigmata. These are holes on each side of the animal's body, through which it breathes. They are eighteen in number, nine on each side. It is evident that these are breathing holes, since, when they have been stopped up, the animal instantly dies.

When the caterpillar has continued feeding for some time, it begins to prepare for its change into a chrysalis or aurelia. Before this important change, it most

usually quits the plant or tree on which it fed, and attaches itself to the stalk or stem. It then entirely ceases to eat, and sets about forming a web, in which it incloses itself, and then becomes an aurelia. In this state it in some degree resembles an animal in an egg, waiting for external warmth to hatch it into life and vigour. As soon as the little animal is set free, and is permitted the use of its wings, it seems to have none, as they are so small as to be scarcely visible. But in a very short time they expand to such a degree, as to be no less than five times as large as they were before. Nor is it the wings only that are thus enlarged; all their spots and paintings, before so minute as scarcely to be observed, are greatly altered, so that what a short time before seemed only a number of confused points, now become distinct and most beautiful ornaments.

THE SPIDER.

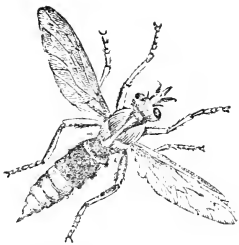
Of all the insects without wings, the first that deserves our attention is the spider. Formed for a life of rapacity, and incapable of living on any other than insect food, all its habits are calculated to deceive and surprise.

Every spider has two divisions in its body. The fore part containing the head is joined to the hinder part, or belly, by a very slender thread. There are several eyes round the head; sometimes eight in number, sometimes only six, two behind, two before, and the rest on each side. They have two pincers on the fore part of the head, terminating in claws resembling those of a cat. Near the point of the claw there is a small hole, through which the animal emits a poison capable of instantly destroying its prey. They have all eight legs, like those of a lobster; and if one of these

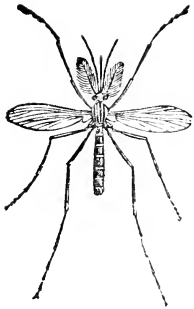
legs be torn away, or a joint be cut off, a new one will quickly grow in its place. Besides the eight legs just mentioned, these animals have two others, which may more properly be termed arms, as they are entirely used for holding and managing their prey.

But though the spider is thus formidably armed, yet as it has no wings to pursue its prey, it must inevitably have been starved, had it not the power of making a web to entrap those insects on which it feeds. For the purpose of making this web, nature has supplied it with a large quantity of glutinous matter within its body, and with five orifices for spinning it into thread.

When the house spider prepares to form its web, it makes choice of some commodious spot, where there is a probability that it will be well supplied with food, and at the same time be quite secure. The animal then distils one small drop of its glutinous liquor, which is very tenacious, and then creeping up the wall, and joining its thread as it proceeds, it darts itself in a very surprising manner to the opposite place where the other end of the web is to be fastened. The first thread being thus formed and fixed at each end, the spider then runs upon it, backwards and forwards, doubling and strengthening it; as upon its force, depends the strength and stability of the whole. The groundwork, as it were, being completed, the spider forms a number of threads, parallel to the first, and then crosses them with others; the clammy substance of which they are formed serving to bind them to each other. The next thing to be done, is to form for itself a retreat, where it may be concealed from any insect that is passing near. This retreat is formed in the shape of a funnel, at the bottom of the web. If a fly, or any other insect that it can overcome, should strike against the web, the spider springs forward with the greatest agility, seizes it, and instantly puts it to death.



WASP



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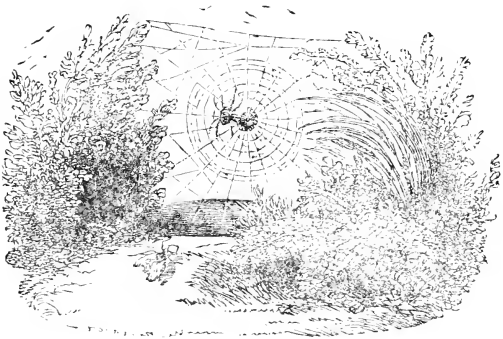
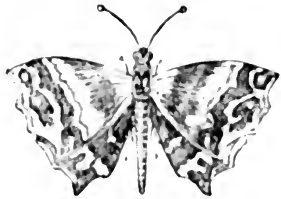


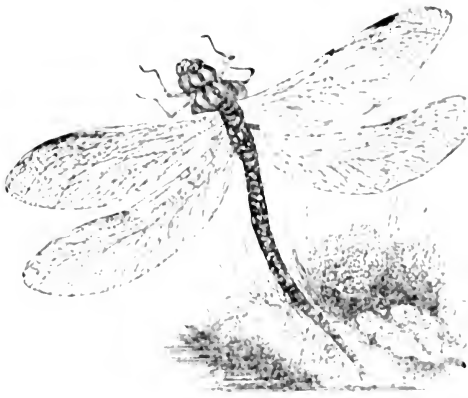
SPIDER

BEE

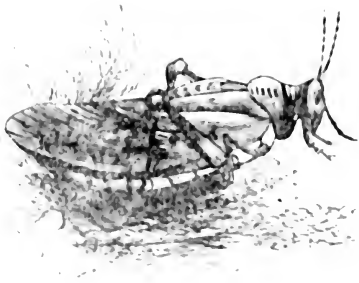
FLEA



BUTTERFLY



DRAGON FLY *Page 208*



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The female generally lays from nine hundred to a thousand eggs in a season, which are of a bluish colour, speckled with black. When the eggs are laid, she makes for them a kind of bag; this bag she sticks to the end of her body, and is so careful of it, that she seldom gives it up, except with her life. Nor does her care of them terminate when they are hatched, for she carries them for some time on her back, till they are able to provide for themselves.

There are few insects to which the spider is not an enemy; but, what is still worse, spiders are the enemies of each other. M. Reaumur tried to turn the labours of spiders to the advantage of man, and actually made a pair of gloves from their webs. But, notwithstanding all his care, he was obliged to desist from his attempts, as they could never be brought to live in society together, but destroyed and devoured each other.

Of this animal there are several kinds, slightly differing from each other. One of the most remarkable, is the *water spider*. This insect differs from the common spider in being able to live in the water, as well as on land. Its appearance under water is very remarkable, being inclosed in a bubble of air that surrounds it on all sides, and which completely defends it from the water. Within this bubble it lives, without being in the least impeded in its operations. It spins its webs in the water as well as on land, and makes its food of the small insects of either element.

Another kind of spider is the *tarantula*, of which so many wonderful stories have been told. It is a native of Italy, Cyprus, Barbary, and the East Indies, where it lives in fields, within a cavity of about four inches deep, and half an inch wide. It lives about a year, never surviving the winter. The stories related of the severe bites given by this creature, and which are said to be curable only by the power of music, are for the

most part impositions on the credulity of travellers. The tarantula is about three quarters of an inch long, and half an inch broad, and generally of an olive-brown colour, and is covered all over its body with a soft down.

But the most formidable of all the spider kind is what is called the *bird-catching* spider. It is about three inches long, with legs as thick as a goose-quill. This is an enormous animal when compared with the rest of the species, and is capable of striking the beholder with terror. Its fangs are as strong and sharp as the claws of many birds, and the slit or orifice near their tip, through which the poisonous fluid flows, can be easily perceived by the naked eye. This animal is found in many parts of America, but chiefly in Guiana, and other parts of South America, where it resides in trees, and frequently seizes small birds, which it first wounds with its envenomed fangs, and then destroys by sucking their blood.

THE FLEA.

This insect, when examined by the microscope, is extremely elegant, and has an appearance as if clad in a coat of mail. It has a small head, with large eyes; a clean and bright body, beset with numerous sharp and shining bristles. All its motions indicate agility and sprightliness, and its muscular power is so extraordinary as justly to excite our astonishment. There is, indeed, no animal whose strength in proportion to the size of its body, can be compared with that of the flea; for it can leap to a distance at least two hundred times the length of its own body. A flea will drag after it a chain, one hundred times heavier than itself, and it will eat ten times its own weight of provisions in a day.

This little creature is produced from eggs, which the females stick fast by a kind of glutinous matter to the roots of the hairs of cats, dogs, and other animals, or to blankets, rugs, and similar articles. From the eggs proceed little whitish worms, about one-fourth of an inch in length. They adhere closely to the body of the animal, or substance on which they are produced. In about eleven days after they are hatched, they weave for themselves a fine covering, and having remained in the chrysalis state for nine days, they emerge from the cocoon, and begin to leap about.

THE LOUSE.

This insect has the body flattened, and is almost transparent. The skin is hard, with here and there several bristly hairs. On each side of the head are the eyes, which are formed in a much more simple manner than in other insects. The feet are short, and terminated by very strong claws, or pincers. They harbour in the hair of man and quadrupeds, or in the feathers of birds, where they live by sucking the blood. They multiply very fast, depositing their eggs upon the hair, and these soon produce young perfect animals. The most effectual remedy against this disgusting insect is cleanliness.

Nor is it animals alone that are infested by these insects, there is scarcely a vegetable but that suffers from its own particular species. Some plants are entirely covered with them, and are almost destroyed by them. They generally assume their colour from the plant on which they feed. This animal, which is frequently called aphis, is of the size of a flea; the body is nearly oval, and the head blunt; the eyes may be seen very plainly, being prominent on the fore part of the head,

and of a shining black colour: near these, there is a black line on each side, and the legs are very slender.

THE BUG.

This animal has two brown eyes, very small, and a little prominent, besides two feelers, with three joints; underneath is a crooked trunk, which is its instrument of torture. Its motion is, in general, slow and unwieldy; yet its sight is so exquisite, that the instant it perceives a light, it generally manages to escape, so that it is very difficult to catch it.

These insects are exceedingly prolific, as the female lays numerous eggs in the cavities of the walls and wood-work of houses, and these are hatched in about three weeks. They appear to subsist chiefly by sucking the blood of animals, though it is probable they find some other sustenance, as they are often found in prodigious numbers, and do not indiscriminately bite all persons.

To clear a house of bugs, the grand point is cleanliness in every respect, and by this alone their increase is to be materially checked. The young are hatched early in the spring, and then is the time that the greatest attention is required to destroy them. For this purpose a mixture of soft soap and verdigris, applied to all the holes and cavities of the bedstead, is the best remedy.

THE WOOD-LOUSE.

The common wood-louse is seldom above half an inch long, and a quarter of an inch broad. It is generally of a livid black colour, and has fourteen feet, seven on each side. It has two short feelers, and the

body is of an oval shape. When it is touched, it rolls itself up into a sort of ball. It is often found among rotten timber, and in decayed trees; and in winter it lies hid in the crevices of walls. The eggs they lay are white and shining, and very numerous. These animals were formerly much used in medicine, being considered as very serviceable in the cure of dropsy.

THE ARBORESCENT WATER FLEA.

This animal, which is about the size of the common flea, appears to have but one eye; for the eyes, by the smallness of the head, seem to be joined together. By the microscope they appear to be reticulated, or formed like a net. These insects are of a blood-red colour, and are sometimes seen in such multitudes on the surface of standing water, as to make it appear all over red, whence many fanciful people have thought the water to be turned into blood.

Of all the parts of this little animal, its branching arms, and the motion it makes with them in the water, deserve our greatest attention. By these it can move in a straight line, waving its arms, as a bird does its wings in the air. By striking the water with its arms in a particular direction, it can ascend to the top of the water, and by striking in a contrary direction, it can dive to the bottom with the greatest ease.

THE SCORPION.

The colour of this formidable insect is a dark brown inclining to a yellowish hue. It is of considerable size, often measuring ten inches in length. It is found in many parts of Africa, where it lives in the earth, bury-

ing itself under stones or rubbish. The eyes are very small; on each side of the head are two arms, each composed of four joints; the last of which is large, and formed in the manner of a lobster's claw. It has eight legs, each divided into six joints; the two hindmost are each provided with two crooked claws, and are here and there covered with hair. The tail is composed of six joints, which are bristly, and formed like little globes, the last being armed with a crooked sting. This is that fatal instrument which renders this insect so formidable; it is long, hard, pointed, and hollow; at the end there are two holes, through which, when the animal stings, it ejects a drop of poison of a white colour, and which is so virulent as to produce a very painful inflamed wound, which sometimes mortifies and proves fatal. The scorpion is extremely bold and watchful, seldom exhibiting signs of fear, but with its tail erect, and sting in readiness, as if confiding in the power of its poison, it waits the attack of its enemy with intrepidity, and seldom desists till it has put its enemy to flight, or is itself killed in the conflict. The best antidote against the sting of a scorpion is said to be strong hartshorn.

THE SCOLOPENDRA, OR CENTIPEDES.

The scolopendra, or, as it is frequently called, the centipedes, from the number of its feet, is very common in many parts of the world, especially between the tropics. Those of the East Indies, where they grow to the largest size, are about six inches long, of a reddish colour, and as thick as a man's finger; they consist of many joints, and from each joint is a leg on each side. They are covered with hair, and seem to have no eyes; but there are two feelers on the head, which they make use of to find out the way they wish to

pass. The head is very round, with two small sharp teeth, with which they inflict wounds, which are very painful and dangerous. Of this animal there are several kinds; some living like worms in holes in the earth, others under stones and among rotten wood; so that it is very dangerous to remove those substances in the places where they abound.

THE LEECH.

The leech, from its uses in medicine, is one of those insects for which man has taken care to provide; but of a great variety, one kind only is considered as serviceable for medicinal purposes. This leech has the general figure of a worm, and is usually about three or four inches long; but when out of water, if touched, it contracts itself in such a manner that it is not above one inch long. It has a small head, and a black skin, edged with a yellow line on each side, with some yellowish spots on the back. But the most remarkable part of this animal is the mouth; within it are placed three very sharp teeth, capable of piercing not only the human skin, but also that of a horse or an ox. No sooner has this voracious creature applied itself to the skin, than it buries its teeth therein, then closes its lips round the wound which it has made, and thus it sucks up the blood as it flows from the orifice made by its teeth.

The leech is viviparous, and produces about forty or fifty at a birth. In this part of the world they seldom grow to above four inches in length; but, in America and the East, they are found from six to seven.

THE DRAGON FLY.

Of all the flies which adorn or diversify the face of nature, these are the most beautiful; they are of all colours—green, blue, crimson, and white; and thus in one animal are united a variety of the most vivid tints and colours. They are distinguished from all other flies by the length of their bodies, by the largeness of their eyes, and the beautiful transparency of their wings, which are four in number. The largest dragon flies are generally from two to three inches long; their tail is forked; the body is divided into eleven rings; their eyes are large, horny, and transparent; and their wings, which always lie flat when they are at rest, are sometimes shining like silver, and sometimes glistening like gold.

The changes which these insects undergo are little less remarkable than those of the butterfly tribes. The female, about the end of May, drops her eggs on the surface of the water. These immediately sink to the bottom, and in a short time are hatched into worms of a dirty brown colour, which quickly display the voracity of their nature by attacking their weaker neighbours of the pool. After remaining in the worm and chrysalis state for about two years, these animals ascend the stem of some water-plant, from whence they burst forth into perfect insects, leaving their case behind them on the stem.

THE ANT-LION.

This animal has long been celebrated for its wonderful ingenuity in forming a kind of pit-fall, for the destruction of such insects as happen unwarily to enter it. In its complete or fly state, it bears a general resem-

blance to a small dragon-fly, but may readily be distinguished from this insect by the shape of its antennæ, which resemble a ram's horns. In its larva, or grub-state, this creature obtains its food only by stratagem. Its usual situation is in a dry, sandy soil, where it forms a pit in the shape of a funnel, from which it artfully throws out the loose sand which may have fallen in upon it, and at the bottom of this funnel it lies concealed. Its long neck and flat head it uses as a spade, and so great is the strength of these parts, that it is able to throw at once a considerable quantity of sand to no less than six inches distance. When an ant or other small insect happens to walk over the edges of its abode, it forces down some of the particles of sand, and thus gives notice to the ant-lion of its presence, when it immediately throws up the sand which covers its head, and repeats the same operation, till the insect is overwhelmed, and falls into its retreat. As soon as it is within reach, the ant-lion seizes it, and having sucked out all its juices, it throws the empty skin to some distance, as if to prevent other insects from being frightened. It then repairs the edges of its pit, and hides itself as before.

When this insect has passed the usual time in the larva state, it quits its pit, and constructs for itself a globular case, and then changes into a chrysalis, from which it soon emerges forth as a perfect fly. The ant-lion has been found in several countries of Europe, but has not yet been found in Britain.

THE COCK-ROACH.

Cock-roaches are a race of pestiferous beings, equally noisome and mischievous to natives and strangers. These disagreeable and voracious insects fly out in

the evening, and commit their depredations; they plunder and spoil all sorts of food, and damage all sorts of clothing, books, paper, and various other articles. In old houses they swarm by myriads, especially in old timber houses, where, when the family is retired at night to sleep, this insect comes out of its hiding place, and, in some countries, makes a noise against the wainscoting, whence, in the West Indies, it is frequently known by the name of the *drummer*.

THE GRASSHOPPER.

This animal is of a green colour, except a line of brown which streaks the back, and two pale lines under the belly and behind the legs. The head is oblong, and bears a considerable resemblance to that of a horse. Its mouth is covered with a kind of round buckler, and armed with teeth of a brown colour, hooked at the points. The feelers are very long, and the eyes are like two black specks, rather prominent. The hind legs are much larger and stronger than the fore ones, and extremely well adapted for leaping. It has four wings, but the hinder ones are much more expansive than the foremost, and are its principal instruments in flying.

A short time after the grasshopper obtains the use of its wings, it fills the meadows with its note, which is the call of the male to the female. About the end of autumn, the female lays her eggs to the amount of as many as one hundred and fifty. About the beginning of May, the eggs are hatched, and the insect is then about the size of a flea, and whitish, and soon after it becomes of a reddish colour. At first their wings are of no service to them, being folded up at the sides of the body; but in about three weeks after the insect is

hatched, the wings become perfectly developed, and the animal then enters upon a life of greater liberty and enjoyment than before.

These animals are heard chiefly in the middle of summer, and at sunset their noise is much louder than in the middle of the day. When caught, they make great resistance, and, if roughly treated, they will bite very fiercely. Their food consists chiefly of grass.

THE LOCUST.

This destructive insect is about three inches in length and has two feelers about an inch long. The head is of a brownish colour, and the mouth bluish. The shield that covers the back is greenish, and the upper sides of the body are brown, spotted with black and purple. The upper wings are brown, with small dusky spots; the under wings are more transparent, and of a light brown, tinted with green. This is the insect that is so much spoken of in the Scriptures, and whose devastations are there so vividly portrayed.

When locusts prepare for their migratory expeditions, it is said they have a leader at their head, whose flight they carefully observe. So great are their numbers, that they almost hide the light of day. They ravage the meadows and the country around, strip the trees of their leaves, and the garden of its beauty, and, in a short time, completely destroy the promise and expectation of the year, frequently occasioning a famine. Indeed, of all insects capable of injuring mankind, the locust seems to possess the most dreadful powers of destruction. Legions of these insects are occasionally observed in various parts of the world, especially in Africa and Southern Asia. In the year 1748, many countries in Europe, especially Poland, Hungary, Ger-

many, and France, were visited by an army of these destructive creatures, and even England did not escape its ravages. Of the innumerable multitudes that infested Southern Africa, in the year 1797, scarcely any adequate conception can be formed. For a space of nearly 2000 square miles, the whole surface of the ground might literally be said to have been covered by them.

In some parts of the East, locusts are eaten. The usual method of preparing them is by parching them over the fire in an earthen pan. They are said to taste like craw-fish.

THE LANTERN FLY.

This is one of the most extraordinary of all the luminous insects, and is of very considerable size, measuring three inches and a half in length, and nearly six inches from tip to tip of the wings, when expanded. The head is nearly as long as the whole body, and is of an oval form. The ground colour of the body is an elegant yellow, having in some parts a strong tinge of green, while in other parts it is marked with numerous bright stripes, and spots of reddish brown: the wings are yellow, elegantly variegated with brown. This beautiful insect is a native of Surinam, and some other parts of South America. During the night, it diffuses so strong a phosphoric light from its head, that it will even supply the place of a candle, and enable a person to read.

THE HOUSE CRICKET.

This animal very much resembles the grasshopper in its form and habits. It, however, differs in its colour, which is uniformly of a rusty brown, and in its place

of residence, which is for the most part near the fireplace. The smallest chink serves to give these insects shelter; and where they have once made their abode, it is very difficult to eradicate them. They are very voracious, and will eat bread, flour, and meat; but are particularly fond of sugar. They never drink, but keep for months together at the back of a fireplace, where it is impossible for them to have the least moisture. The warmth of their situation serves greatly to increase their mirth and noise. Their little piercing note is very agreeable to some persons; but extremely disagreeable to others, who think there is something particularly melancholy in the sound, and use every means to extirpate them.

THE MOLE CRICKET.

Of all the cricket tribe, the mole cricket is the most extraordinary. This animal is about two inches and a half in length, and three quarters of an inch in breadth. The body consists of eight scaly joints or folds, and is of a dusky brown colour. The shield of the breast is of a firm texture, of a blackish colour, and hairy. The fore feet, which are this animal's principal instruments for burrowing into the earth, are strong, webbed, and hairy. It commonly remains under ground, where it burrows even faster than a mole. This is one of the most formidable insects to the gardener, as it chiefly resides in light ground; and in a single night it will run along a furrow that has been newly sown, and rob it of all its contents. They form their nests in a most curious manner, and are particularly careful of their young.

THE EAR-WIG.

It is not generally known that the ear-wig is a winged insect, since, in the quiescent state, the wings are folded up close to the body. This is a very destructive insect in gardens and orchards, as it lives on fruits and flowers. They may be seen in the night among lettuces and other esculent vegetables, committing depredations which are generally ascribed to slugs. They also attack such fruit as has been wounded by other insects and birds, and eat into the heart of it. The best time to catch them is during the night, while they are feeding, when they may be taken in great numbers. These animals have the singular property of hatching their eggs, and tending their offspring with the greatest care.

The idea of these insects insinuating themselves into the ear is utterly unfounded, since the wax and membranes of the ear render it impossible for so inconsiderable an enemy to enter.

THE EPHEMERA.

That there should be a tribe of insects whose duration extends but a single day, or rather only for a few hours, is indeed surprising; but this is actually the case with this insect, and hence it is called ephemera, which is a Greek word, signifying, *lasting for a day.* The worm, however, from which it is bred is by no means short-lived; since it lives no less than two years, and sometimes even for three. The ephemera, in its fly state, is a very beautiful winged insect, resembling the butterfly in its shape. Its wings differ from those of a butterfly in being transparent and very thin. These insects have four wings, the uppermost of which are

much the largest. The body is long, and from this a tail proceeds, that is longer than all the rest of the fly.

The worm that is to become a fly, and that lives so long in the previous portion of its existence when compared with the latter part, is an inhabitant of the water. Having remained in its worm state for about two or three years, it is changed into a chrysalis, and when ready to undergo its last transformation, it rises to the top of the water, and in an instant becomes a most beautiful insect. Millions of them rise in this manner to the surface of the water, and fill the neighbourhood with their flutterings. But all their sports are soon to have an end, for the female has scarcely time to lay her eggs before she dies. So numerous are these animals, that it is said when they die, the ground is covered with them to the depth of several inches, and cart-loads of them are carried away for manure.

THE BUTTERFLY.

So great is the number of these beautiful insects, that, though upwards of a thousand of them have been classified and arranged, yet the catalogue is still incomplete, as fresh species are continually discovered. The wings of butterflies fully distinguish them from insects of other kinds. If we look at the wing of a butterfly with a good microscope, we shall perceive that it is studded over with a variety of little substances, of different forms and dimensions. Nothing can exceed the beautiful and regular arrangement of these substances; as regular, indeed, as the feathers of a bird. The body is composed of rings, which are generally concealed under long hair, with which that part of the animal is clothed. The legs are six in number; the two fore-legs are, however, so much concealed in

the long hair of the body, that it is sometimes difficult to discover them.

With respect to the eyes of butterflies, they are extremely brilliant, and in them may be discovered the various colours of the rainbow. When closely examined, they will be found to resemble a multiplying-glass, or a brilliantly-cut diamond.

The feelers, or antennæ, of butterflies are placed at the top of the head, near the edge of each eye. The proboscis, or trunk, is placed exactly between the eyes, and when the animal is not employed in seeking its nourishment, it is rolled up like a curl. Previous to feeding, the butterfly flies round the flower, and then settles on it. It then uncurls its trunk, and thrusts it out, either wholly or in part; and thus carefully searches the flower to the very bottom.

When the butterfly is ready to lay her eggs, she takes care to place them only on those plants that are suitable for it in its caterpillar state. They are attached to the leaves of the plant by a gummy substance, where they continue till they are hatched. The eggs are sometimes placed round the tender shoots of plants, and amount to many hundreds.

THE COMMON CABBAGE BUTTERFLY.

This species is very common, and in its caterpillar state is very destructive to cabbage and cauliflower plants. These caterpillars seem almost confined to these vegetables, on which they are generally to be found in great numbers from June to October. The butterflies first appear on wing in the middle of May, and about the end of the same month they lay their eggs in clusters on the under-sides of cabbage-leaves. In a few days after, the caterpillars come forth, and continue to

feed together till the end of June, when they are at their full growth. They then seek about in search of convenient places to fix themselves, where, after their change, the chrysalis may be sheltered. They then fasten their tail by a web, and carry a strong thread at the same round their body, near the head, and thus firmly secured, they hang a few hours, when the chrysalis becomes perfectly formed. In fourteen days after this, the butterfly bursts forth and is on the wing. The caterpillars of the latter brood of eggs, (for the butterfly lays a former and a latter brood,) arrive at full growth and change to chrysalises in September, in which state they remain through the winter, till the following May. During this time we often see them hanging under the copings of garden walls, and in other places where they can have a tolerable shelter from the inclemency of the weather. The general colour of the cabbage butterfly is white, but the male differs from the female in having a few dark spots under the wings.

THE MOTH.

The chief distinction between butterflies and moths is this: the butterfly has a small body and large wings; whereas the moth has a large body and small wings: the feelers of the butterfly are knobbed at the end; but those of the moth are tapering, finer and finer, to a point. Another great distinction between these insects is, that the butterfly flies by day, and the moth by night.

THE HAWK MOTH.

This species is found in Great Britain, and, in its caterpillar state, feeds upon the leaves of the potato.

These insects suck the honey from flowers by means of a very long trunk, without stoping to rest. They fly very swiftly. The caterpillars are commonly armed with a horny protuberance at the tail, and when they are ready to change into chrysalises, they bury themselves below the earth, where they sometimes remain for a year. Some of them, however, spin their webs on the bark of trees.

THE CLOTHES MOTH.

Of this destructive insect there are several species. One of them attacks tapestry, linings of carriages, and other hangings. Another species commits terrible depredations among furs, and ladies have often to deplore the ravages committed among their muffs and tippets. It often does very great damage to blankets and other woollen cloths and stuffs, especially if they are not kept dry and well aired. It is in the worm state that it commits these ravages, eating its way, and making, as it passes, its moveable case, which it enlarges from time to time, as it increases in size.

Several methods have been made use of to prevent the havoc committed by these insects. It is said that drawers lined with cedar, or containing cedar shavings, deter the moths from coming thither to deposit their eggs. The smoke of tobacco also kills them; and clothes dipped in a decoction of that herb are never attacked by them. The smell of turpentine is also very fatal to them, and therefore goods shut up in a place with a saucer containing this volatile oil are preserved from them.

THE SILK-WORM.

Though silk was anciently brought to Rome, yet it was so scarce as to be sold for its weight in gold; and

was most probably imported from the most remote parts of the East.

The real history of the silk-worm was unknown to the Romans till the reign of the Emperor Justinian, and it is supposed they were not common in Europe till the beginning of the twelfth century.

The silk-worm is a large caterpillar of a whitish colour, with six feet on each side of its body, and producing an insect of the moth kind. The cocoon which it spins is formed for covering it, while it continues in the chrysalis state; and several of these, properly wound off and united together, form those strong and beautiful threads which are woven into silk. The feeding of these worms, the gathering, the winding, the twisting, and the weaving of their silk, form one of the principal manufactures of Europe.

There are two methods of breeding silk-worms: for they may be left to grow and remain at liberty upon the trees where they are hatched; or they may be kept in a place built for that purpose, and fed every day with fresh leaves.

The first method is used in China, Tonquin, and other hot countries; the second is used in those places where the animal has been artificially propagated. In the warm climates, the silk-worm proceeds from eggs which have been glued by the parent moth upon the mulberry tree, and which remain in that situation during the winter. As soon as the leaves shoot forth, the worms, bursting from their little eggs, crawl upon the leaves, where they feed most voraciously. After some months feeding, they form on the leaves small bundles or cones of silk, which appear like so many golden apples, painted on a fine green ground. Such is the method of breeding them in the East; but, in our colder climate, they must be sheltered and protected

from the wind and rain, otherwise they would be infallibly destroyed.

The silk-worm, at the time of its bursting the shell, is extremely small, and of a black colour; but the head is of a more shining black than the rest of the body: after a few days it begins to turn whitish, or of an ash-coloured grey. The skin, however, soon begins to grow too tight, when the insect throws it off, and appears clothed anew; it then becomes larger and much whiter, with somewhat of a greenish cast: this operation of changing its skin it repeats several times. After it has taken a sufficiency of food, it prepares itself a retreat to defend it from external injuries.

This retreat is the cocoon, or ball of silk, within which it buries itself till it assumes its winged form. This ball is spun from two longish bags withinside the animal, and filled with a gummy fluid of a yellow colour. Previous to spinning its web, the silk-worm seeks out some convenient place to erect its cell without obstruction. When it has found a leaf, or chink, fitted for its purpose, it begins to writhe its head in every direction, and fastens its threads on every side to the different parts of its retreat. This cone is composed externally of a kind of rough cotton-like substance, called floss; but within, the thread is more distinct and even. The cocoon, when completed, resembles in shape a pigeon's egg, and in about three weeks the moth would break through; but as this would spoil the silk, the keepers of these insects take care to kill all the chrysalises, except those which they require for continuing the race. They then take off the floss, and throw the cones into warm water, stirring them till the first thread offers them a clue for winding all off. They generally take eight of the silken threads together, keeping the cocoons under water till a proper

quantity of silk is wound off; for they do not wind off the whole, as the latter parts are weak, and of a bad colour.

THE BEE.

In every hive there are three different kinds of bees. First, the labouring bees, which make up by far the greatest number, and are called neuters, being neither male nor female, born for the purposes of labour, and for supplying the young with provisions, while in their helpless state. The second kind are the drones; these are of a darker colour, longer, and thicker than the former; these are the males, and there is not above one hundred of them in a hive of seven or eight thousand bees. The third sort is much larger than either of the former, and still fewer in number: some assert that there is not above one in every swarm, while others maintain that there are sometimes five or six. These are called queen bees, and lay all the eggs, from which the whole swarm is hatched in a season.

In examining the structure of the common working bee, the first remarkable part that offers is the trunk, which serves to extract the honey from the flowers. It is not formed like that of most other flies in the manner of a tube, by which the fluid is sucked up, but like a tongue to lick it away. The insect is also furnished with teeth, which serve it in making wax. This substance, as well as their honey, is gathered from the flowers: it consists of that dust, or farina, which contributes to the fecundation of plants, and is moulded into wax by the little animal at leisure. Every bee, when it leaves the hive to collect this precious store, enters into the cup of the flower, particularly such as are charged with the greatest quantities of it. As the animal's body is covered over with hair, it rolls itself

within the flower, and soon becomes quite covered with the dust, which it then brushes off with its two hind legs, and kneads into two little balls. In the thighs of the two hind legs are two cavities, edged with hair, and into these, as into a basket, the insect sticks its pellets.

The body of the bee contains, besides the intestines, the honey-bag, the venom-bag, and the sting. The honey-bag is as transparent as crystal, containing the honey which the bee has sucked from the flowers; of which the greater part is carried to the hive, and poured into the cells of the honey-comb, while the remainder serves for the bee's future nourishment; for during summer it never touches what has been laid up for winter. The sting, which serves to defend the bee from its enemies, is composed of three parts; the sheath, and two darts, which are extremely small and penetrating. Both the darts have several small points, like those of a fish-hook, which render the sting more painful. The sheath, which has a sharp point, makes the first impression, which is followed by that of the darts, and then the venomous liquor is poured in.

From examining the bee singly, we now come to consider it in society, as an animal not only subject to laws, but vigilant, laborious, and disinterested. All its provisions are laid up for the community, and all its arts in building cells are designed for the benefit of its posterity. The substance with which the bees build their cells is wax, fashioned into convenient apartments for themselves and their young. When they begin to work in the hive, they divide themselves into four companies: one of these roves in the fields in search of materials; another employs itself in laying out the bottom and partitions of its cells; a third is employed in making the inside smooth; and the fourth company bring food for the rest, or relieve those who return with

their respective burdens. But they are not kept constantly to one employment: those that have been at work at home being permitted to go abroad; while those who have been in the fields in turn, work in constructing the comb. Their diligence is so great, that in one day's time they are able to form cells sufficient to contain three thousand bees. These cells are perfect hexagons in their form—a figure which it has been mathematically demonstrated is the best adapted to afford the greatest possible advantage in the smallest possible space. These cells serve for different purposes: for laying up their young, for their wax, and for their honey. The cells for their young are most carefully formed: those intended for lodging the drones are larger than the others, and that for the queen bee is the largest of all.

The bee is furnished with a stomach for its wax, as well as for its honey. In the former, the powder is digested and concocted into real wax; and is then ejected by the same passage by which it was swallowed. The honey is extracted from that part of the flower called the nectary. From the mouth of the bee it passes into the first stomach, or honey-bag, which, when filled, appears like an oblong bladder. The bee then returns to the hive, and pours it into one of the cells, and then flies off for a fresh supply.

We now come to consider the social habits and institutions of this wonderful creature. How numerous soever the multitude of bees may appear in one swarm, they all owe their origin to a single parent, called the queen bee. This animal, whose existence is of such importance to her subjects, may be easily distinguished from the rest, by her size and the shape of her body. On her safety depends the welfare of the whole commonwealth, and the attentions paid her by the rest of the swarm, show of what importance they consider her.

When she has deposited her eggs in the cells, the working bees undertake the care of these eggs. As soon as the worm is excluded from the egg, they attend it with the utmost care and tenderness, feed it, and watch the cell with unremitting care and attention. In about six days the worm comes to its full growth, and then makes for itself a web, in the manner of a caterpillar, and is soon transformed into a chrysalis; and thus, in about twenty days after the egg was laid the bee is completely formed, and fitted to undergo the fatigues of the state, and industriously begins the task which it pursues unremittingly as long as it lives.

In the space of a few weeks, however, the number of the inhabitants in the hive becomes so great, that the young ones are obliged by the old ones to sally forth in quest of new habitations; that is (as it is commonly expressed), the hive begins to swarm. Sometimes, however, the young bees refuse to leave the hive, and dreadful battles are often seen to ensue. The night before swarming takes place, an unusual buzzing is heard in the hive; all labour is discontinued; every bee is employed either in enforcing, or reluctantly yielding, obedience. At length, after some noise and tumult, a queen bee is chosen to guard the young colony to other habitations.

In those countries, where the bees are wild and unprotected by man, they generally build their cells in a hollow tree; but, with us, they settle upon the first green branch that stops their flight. When there is a sufficient number settled, the queen bee joins them, and, in a short time, the whole body is at ease. If there should happen to be two queens in a swarm, the bees always destroy the weakest. When the swarm is thus conducted to a place of rest, and the policy of the government is settled, the bees return to their former labours. Soon after this, and towards the latter end

of autumn, the drone bees, that had hitherto led a life of indolence and pleasure, are now slaughtered without mercy; for the working bees in a body fall upon them, and in a short time the ground all around the hive is strewed with their dead bodies.

The humble bee differs from the common bee in being larger, and in building its nest in holes in the ground. Each humble bee makes a seperate cell, about the size of a small walnut, Several of these cells are joined together in such a manner that the whole appears like a cluster of grapes. The females; which have the appearance of wasps, are very few, and their eggs are laid in cells, which the rest soon cover over with wax. It is uncertain whether the humble bees have a queen or not, but there is one much larger than the rest in every nest, without wings and without hair, and all over black, who goes and views the works from time to time, as if to examine whether everything is done right.

THE WASP

The wasp is longer in proportion to its bulk than the bee, and is marked with bright yellow circles round its body. On each side of the mouth, this animal is furnished with a long tooth, notched like a saw; and with these it is enabled to cut any substance, and to carry it to its nest. Of all insects the wasp is the most fierce, voracious, and the most dangerous when enraged.

Every community among bees is composed of females, or queens; drones, or males; and neutral, or working bees. The same is the case with wasps, except, whereas among bees there are but one or two queens in a hive, among wasps there are two or three hundred.

Although wasps are ferocious and cruel towards

other insects, they are highly civilized and polished in their intercourse with each other, and form a community whose labours will not suffer in comparison with those of bees. Like these, the great object of their industry is to erect a structure in which to lodge and bring up their young, towards which they display much tenderness and affection. The structure resembles a honeycomb in the form and situation of its cells, but it is formed of very different materials. It is usually situate under ground, is of an oval figure, and about sixteen inches long by about twelve in breadth. It is surrounded on the outside by a thick coating of numerous leaves, or substances resembling greyish paper, not touching each other, but having a small interval between each two, so that the rain does not easily penetrate them. The interior of the nest consists of from twelve to fifteen circular combs, of different sizes, ranged horizontally, so as to form several distinct stories. Each comb is composed of a numerous assemblage of hexagonal cells, separated from each other by double partitions, and all made of the same kind of paper. Every upper comb is connected with that below by several strong cylindrical pillars, the middle combs having from forty to fifty of these pillars. In a populous community of wasps there are not fewer than sixteen hundred cells of different sizes. As the nest is often a foot or more below the ground, a tunnel, or covered way, is formed by the wasps, as a passage of communication, and this road is often very long and winding.

It was long a matter of surprise and doubt from whence the wasps derived the materials for making the paper of which their combs are constructed. It is now pretty certain that they form this paper from the wood of window-frames, posts and rails, which they bite off with their teeth; and when they have collected a heap of filaments they moisten the whole

with a kind of glutinous matter, proceeding from their mouths, and knead it into a kind of paste; and in this manner they form leaves as thin as those of ordinary writing-paper for the combs, and also solid pillars for their support.

While some are engaged in building their cells, others fly off for food. They attack smaller insects, and either carry them entire to the nest, or cut them in two, and transport their bodies thither; they make war on the bees and plunder their hives; they resort to gardens, and suck the juices of fruits; and they pillage butchers' stalls, from which they often convey pieces of meat nearly as big as themselves. They then return to their nest, and distribute part of their spoil to those that remained at home.

Only the female and neuter wasps are furnished with a sting, which, like that of the bee, is a very formidable weapon, and is capable of inflicting a very painful wound.

THE ICHNEUMON FLY.

Of this insect there are several kinds, but the most formidable, and that which is best known, has four wings, a long, slender, black body, and a three-forked tail, which is a weapon of great force and efficacy. There is scarcely any substance which it cannot pierce, and it is with this that this animal prepares a place for depositing her eggs wherever she thinks fit to lay them. But it is chiefly within the body of the caterpillar that the ichneumon fly lays her eggs. For this purpose, she darts her tail into the animal's body, and at every dart, she deposits an egg. When she has laid about a dozen eggs in the body of one caterpillar, she flies off to do the same in that of another. As soon as the young are hatched, they prey upon the caterpillar, nor do they cease till they have actually eaten up

nearly the whole of the insect. The millions of caterpillars which are thus destroyed in a single summer are inconceivable; and hence it has received the name of the *ichneumon* fly, being as useful in destroying the insect tribe, as the ichneumon is in destroying the eggs of the crocodile.

THE COMMON FLY.

Most of these insects, in the larva or maggot state, live on meat, cheese, or the larvæ of other insects. The well-known property possessed by flies, of walking with their backs downwards or perpendicularly on ceilings and walls, depends on the peculiar mechanism of their feet, which are furnished with flaps, and which apply so closely to the surface as to exclude the air, and thus support the insect by the pressure of the surrounding atmosphere. One of the most remarkable circumstances in the natural history of flies is their extraordinary tenacity of life when immersed in vinous liquors. This circumstance appears to have been first noticed by Dr. Franklin, on opening a bottle of Madeira wine many months after it had been corked, and which contained some flies, several of which, on being exposed to the rays of the sun, were restored to life and flew away.

THE ANT.

The body of the ant is divided into head, breast, and belly. The eyes are entirely black; the mouth is furnished with two crooked jaws, which project outwards. The breast is covered with a fine silky hair, and from it project six legs, tolerably strong and hairy, the extremities of which are armed with two small claws, which assist the animal in climbing. The belly is more red than the rest of the body, which is of a brown chestnut colour.

As soon as the winter is past, the first fine day in spring, the ant-hill, that before seemed a desert, swarms with life. The first day they never leave the hill, but run over every part of it, in order to examine it, and to observe what injuries it has sustained during their winter's sleep.

Like bees, they are divided into males, females, and neuters, or workers. Of these, the females are larger than the males, and the working ants are the smallest of all. The two former have wings, but the latter have none. In about ten days after their appearance, the labours of the hill are in great forwardness; the working ants may be seen going diligently from the ant-hill in search of food for themselves and their companions, and of proper materials for forming a comfortable retreat for their young.

Ants live on various kinds of provisions, as well animal as vegetable. Small insects they will kill and devour, and sweets of all kinds they are particularly fond of. If they find a juicy fruit, they eat what they can, and then, tearing it to pieces, they carry home their load. If they meet with an insect above their match, several of them will fall upon it at once, and, having torn it to pieces, they will each carry off a part of the spoil. If they meet in their excursions with anything that is too heavy for one to bear, and which they are unable to divide, several of them will endeavour to force it along, some dragging and others pushing it along.

After a few days of fine weather, the female ants begin to lay their eggs, which are carefully watched and protected by the working ants, and who carry them to the bottom of their hill, and guard them against cold and moisture. After a time, the young worms, or maggots, come forth, and soon after change into aurelias, and at last into perfect insects.

What has been said of the ants of Europe laying up provisions against the winter has been shown to be false, since they pass that time in a torpid state. But with respect to those of tropical climates the statement is perfectly true. The ants of Africa are above an inch long, and are in every respect, most formidable insects. They build an ant-hill of very great size, from six to twelve feet high, tapering in the form of a pyramid. This habitation is constructed with such skill, that a honeycomb hardly excels it for regularity. These insects are exceedingly voracious and destructive. Fowls and even rats are attacked by them. They also commit dreadful havoc on furniture and all kinds of goods, and, if not prevented, will completely destroy them.

THE BEETLE.

All the beetle tribe breed first from eggs; then they become grubs, next a chrysalis, and lastly, the animal leaves its prison, and bursts forth a winged insect in full perfection. Of the beetle there are various kinds; all agreeing, however, in having cases to their wings, which are, indeed, absolutely necessary to these insects, as they mostly live under the surface of the earth. These cases prevent the various injuries their wings might sustain, and though they do not assist flight, yet they keep the wings clean and even, and produce a loud buzzing noise when the animal rises in the air.

The muscles of the beetle are endued with such surprising strength that, in comparison of their size, they are very many times stronger than those of a man. In fact, it was absolutely necessary that this should be the case, to enable the animal to dig its subterraneous abode, to which it frequently returns, even after it has become a winged insect, capable of flying.

THE STAG BEETLE

This is the largest of all the European beetles, measuring above two inches in length. It is the male which is the most remarkable for its extraordinary jaws, which resemble stags' horns.

THE ELEPHANT BEETLE.

The elephant beetle is the largest of all the beetle tribe, and is found in South America, particularly Guiana and Surinam. It is of a black colour, and the whole body is covered with a very hard shell, as thick and as strong as that of a small crab. Its length is nearly four inches, and its breadth two inches and a quarter. The antennæ, or feelers, are quite horny; for which reason the proboscis, or trunk, is moveable at its insertion into the head, and seems to supply the place of feelers. The proboscis is an inch and a quarter long, and turns upwards, making a crooked line, terminating in two horns, each of which is nearly a quarter of an inch long.

THE COCKCHAFER.

The cockchafer, or May-bug, as it is sometimes called, has, like the rest of the beetle tribe, a case for its wings. It is of a reddish brown colour, sprinkled with a whitish dust, which easily comes off. The fore-legs are very short, and are the better calculated for burrowing in the ground, where this insect makes its retreat.

This is a very destructive insect, and in some seasons it has been found to swarm in such numbers as to commit great depredations among vegetables. The female bores a hole where she deposits her eggs, which are of an oblong shape, and of a bright yellow colour. In about three months after the eggs have been deposited in the earth, the insect breaks its shell, and a

small grub or maggot crawls forth, and feeds upon the roots of whatever vegetable lies nearest. These voracious insects continue in the worm state for more than three years, devouring the roots of every plant they approach. They at last become a great white maggot, with a red head about the size of a walnut, and are eagerly sought for by birds of all species.

At the end of the fourth year, this creature becomes a chrysalis, and after three months, it becomes a winged insect. About the end of May these animals, after having lived four years in the ground, burst forth when the first mild evening invites them. When the season is favourable for them, they are seen by myriads buzzing along, and striking against everything that obstructs their flight. This insect, in its worm state, makes one of the chief repasts of the feathered tribe. Rooks and hogs are particularly fond of them, and devour them in great numbers, and thus prevent, in a great degree, the mischief they would occasion. In those places where the rookeries have been destroyed, the cockchafers have multiplied to such a degree as completely to destroy the vegetables in their neighbourhood.

THE GLOW WORM.

The male and female glow worm differ in several respects from each other. The male is smaller than the female. Both sexes emit light in the dark, but the light of the female is stronger than that of the male. This light is confined to four points, two of which are situated on the two hindermost rings of the body. Glow worms are frequently seen about evening in the month of June, in woods, meadows, and the bottoms of hedges, and when numerous they make a very brilliant appearance. It appears that this insect can, at pleasure, conceal its light from its enemies.

THE COCHINEAL INSECT.

These animals are natives of America, and are particularly attended to in Mexico. They also are much cultivated in the East Indies, and are chiefly found in that species of cactus called the prickly pear. When the female is arrived at her full size, she fixes herself to the surface of the leaf, and becomes enveloped in a white cottony matter, which she is supposed to spin. After the female has laid all her eggs, she becomes a mere husk, and dies; so that great care is taken to kill the insects before that time. This is done by holding them tied up in a bag, over the steam of hot vinegar, or spirits, or sometimes by spreading them on a flat dish of earthenware placed over a charcoal fire.

As they appear in our shops, they are of an irregular shape; of a scarlet colour within, and of a blackish red without. They are used in dyeing, and produce a most beautiful scarlet colour.

THE GNAT.

The gnat, in its perfect state, is a small but beautiful insect. These creatures are supposed to feed both on animal and vegetable juices, but chiefly on the latter. In these temperate climates we have but a faint idea of the pain occasioned by these insects in warmer countries, where persons sometimes have their faces and limbs severely inflamed, in consequence of being bitten by them.

The mosquito, which is so troublesome in the West Indies and other parts of America, is only a larger variety of the common gnat. To secure themselves from their attacks by night, the inhabitants surround their beds with curtains of thin gauze.

THE GADFLY.

This insect deposits its eggs in the backs of cattle, and the larvæ live beneath the skin. When full grown, the larvæ effect their escape by writhing backwards and forwards, and at length fall to the ground, and having found a suitable retreat they become chrysalises.

The ox gadfly is a very beautiful insect. The pain it inflicts in depositing its eggs is very severe. When an ox is attacked by one of these insects, it runs bellowing to the nearest water, with the tail held straight from the body in the direction of the spine, and the head and neck are also stretched out to their utmost length. Such is the dread that cattle have of these flies, that when one of them has met a herd returning home from the labours of the day, they have been known to turn back in the utmost confusion, nor have their drivers, with all their endeavours, been able to restrain them.

ZOOPHYTES.

The term zoophytes is applied to a class of beings that seem to partake of the nature both of animals and plants; the word zoophytes signifying "vegetables endued with animal life."

In this class, we may place all those animals that can be propagated by cuttings, or, in other words, which, if divided into two or more parts, each part becomes a separate and perfect animal; the head shoots forth a tail, and, on the contrary, the tail produces a head. Some of these will bear dividing only into two parts, such as the earth-worm; some may be divided

into more than two, and of this kind are many of the star fish; others may be cut into a hundred parts or more, each becoming a perfect animal.

WORMS.

Animals of the worm kind being entirely destitute of feet, trail along the ground, and find themselves a retreat under the earth, or in the water. As the worm is designed for living under the earth, and leading a life of obscurity, so it seems to be tolerably well adapted to its situation. Its body is armed with small, stiff, sharp prickles, which it can erect or depress at pleasure; under the skin there lies a slimy juice that can be ejected, as occasion requires, to lubricate its body, and facilitate its passage into the earth. It has breathing holes along the back, but it is without eyes, without ears, and also without feet.

These animals are produced from eggs, which are laid in the earth, and hatched in about fourteen days. During winter they bury themselves deeper in the ground, and seem, in some measure, to share the general torpidity of the insect tribe. In the spring they revive with the rest of nature, and come forth on damp and dewy evenings from their retreats. They chiefly live in a light, rich, and fertile soil, moistened by occasional showers, but avoid those places where the water is apt to be on the surface of the ground, or where there is a great deal of clay, which makes it difficult for them to pursue their course under ground. Helpless as they are formed, yet they seem very vigilant in avoiding those animals that make them their prey; in particular the mole, who feeds entirely upon them beneath the surface, and who seldom, in consequence of the dimness of its sight, ventures into the open air; him they avoid by darting upward from the earth, the

instant they feel the ground move; and fishermen, who are well acquainted with this, take them in great numbers, by stirring the earth where they expect to find them.

If the earth-worm be cut in two, each part will become a perfect animal: the head part shooting out a tail, and the tail part shooting out a head; with this difference, however, that it requires several months for producing a head, whereas a tail is produced in as many weeks. Thus by dissection two animals may be made out of one, each with its separate appetites, each endued with life and motion, and, apparently, as perfect as that single animal from whence they derived their origin.

THE TAPE-WORM.

Of all worms, the tape-worm is the most remarkable in its structure, and probably the most injurious. They are found in the intestines of animals, but in a particular manner in those of the human species. In their general form, they resemble a thin narrow ribbon of considerable length, and of a whitish colour. The common tape-worm is sometimes met with several yards in length. The numerous joints of which this worm is composed have usually a very white colour. The head is nearly square, with a projecting part forwards, having a distinct circular hole in the middle. The body is composed of thin flattened joints of unequal lengths.

THE STAR FISH.

The star fish consists of a numerous tribe that at different times assume different appearances; the same animal that at one time appears like a ball,

shortly after becomes like a plate. All these creatures are formed of a semi-transparent gelatinous substance, and to an inattentive spectator appear like a lump of inanimate jelly, floating at random on the surface of the sea. But upon a more minute inspection, they will be found possessed of life and motion, and to shoot forth their arms in all directions in order to seize upon such insects as are near, and devour them with great rapacity. Though generally transparent, they are sometimes found of different colours, some inclining to green, some to red, and some to brown.

THE CUTTLE FISH.

The cuttle fish is about two feet long, and is covered with a very thin skin, and its flesh is composed of a gelatinous substance which, however, withinside is strengthened by a strong bone. It is possessed of eight arms, which it extends, and which, probably, are of service to it in fishing for its prey.

These creatures are found along many of the coasts of Europe, but they are not easily caught, in consequence of a contrivance with which they are furnished by nature: this consists of a black substance of the colour of ink, which is contained in a bladder on the left side of the belly. When, therefore, this fish is pursued, and finds a difficulty of escaping, it spurts forth a great quantity of this black liquor, by which the surrounding water is totally darkened, and then it escapes by taking refuge at the bottom.

THE POLYPUS.

Whoever has looked with care into the bottom of a wet ditch when the water is stagnant, and the sun shining powerfully, may remember to have seen many

little transparent lumps of jelly, about the size of a pea, and flatted on one side; those also that have examined the under side of the broad-leaved weeds that grow on the surface of the water must have observed them studded with a number of those little jelly-like substances, of which, however, they took no particular notice. These little substances are what are called polypi, lying in a quiescent state, and seemingly inanimate, because not excited by the calls of appetite to action.

The fresh-water polypus, at its greatest extent, is seldom seen above an inch and a half in length, but it is much shorter when it is contracted and at rest. Those that are found in the sea, however, are found from three to four feet in length. The fresh-water polypus has a progressive motion, which is performed by the power it has of lengthening and contracting itself at pleasure; they go from one part of the bottom of the water to another, and climb up the sides of aquatic plants, and are often seen to come to the surface of the water.

These creatures subsist upon other animals much smaller than themselves, particularly a kind of very small red worm, which they seize with great avidity. The manner of the propagation, or rather the multiplication, of these animals, has long been a matter of astonishment. Some of them are produced from eggs, as plants are produced from seeds; some are produced by buds issuing from their bodies; while all may be multiplied by cuttings, and this to a surprising degree of minuteness. It is indifferent whether one of them be cut into ten or a thousand parts; each becomes as perfect an animal as that which was divided; but it must, however, be observed that the smaller the part which is separated from the rest, the longer it is in coming to maturity.

Some of this species have been discovered so nearly resembling vegetables, that they have actually been taken for such.

CORAL.

The beautiful substance called red coral is obtained from large beds or reefs in the Mediterranean Sea, along the coasts, and near the various islands. The apparatus employed by the coral fishers consists of two cross beams, having a leaden weight to sink the wood to the bottom, and several strong nets to entangle the coral branches, with a strong line for the purpose of directing the cross beams, or hauling up the coral entangled in the nets.

This substance has a very different appearance when newly obtained, from that which it usually exhibits in this country, as it is then covered with a fleshy external layer, with numerous polypi extended over it. This external layer is removed before it is exposed for sale.

SPONGES.

The sponges are the most torpid and inanimate of all the zoophytes. The common sponge is of no regular figure, but usually lobed, very elastic, rough on the surface, and of a woolly texture. It is chiefly obtained in the Mediterranean, where it is found adhering by a broad base to the rocks about the islands in that sea. It is also found in the Red Sea and the Indian Ocean. When fresh taken up by the fishermen, it is covered with a gelatinous substance, which smells strongly of fish; this is carefully removed, and the sponge well cleaned, to prevent it from spoiling. When cut perpendicularly, the internal structure is found to consist of several small tubes, which ramify into numerous divisions, and terminate on the surface in small pores. These pores are considered as the mouths of the animals composing the sponge. When cleaned and dried, sponge forms an article of commerce of considerable importance.

ANIMALCULÆ.

Although the size of these beings is extremely small, they are very interesting in many points of view. Their body is nothing but a gelatinous, transparent substance, without orifice or any visible internal organ. Their form is very various; some are long and slender like a worm, some oblong, others cylindrical, others again are globular; while others are of various angular forms. But what is most remarkable in these animals is their extreme minuteness. Few of them are visible to the naked eye; and many are so diminutive, that the most powerful microscopes show them only as moving points.

There is scarcely any fluid destitute of animalculæ; but they are most abundant in stagnant waters, in vegetable infusions, and in vapid vinegar. The motions of these creatures is extremely various. Some proceed with an undulating motion like an eel; others move in curvilinear directions. The motions of some seem to be made about a fixed point as a centre, others roll along like a wheel or a hoop. In a word, it is utterly impossible to describe all their various motions.

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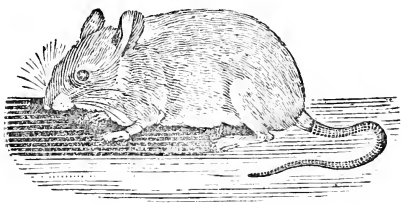
ANECDOTES.

THE FOX.

It must not be imagined that the fox lives entirely on the inhabitants of the farmyard. Indeed, if he did so, he would not keep himself in very good condition. He catches rabbits in plenty, and occasionally a hare; or should he be in a country where deer live, he is very fond of a young fawn. But should these fail, he has no objection to rats, mice, weasels, frogs, or the larger insects, such as beetles and grasshoppers. Indeed, insects form a considerable portion of the food of even the larger beasts of prey, the lion and tiger not excepted. The fox is also extremely fond of grapes, a fact that is recorded in a well-known fable. He not only catches rabbits that are wandering from their holes, but digs out the young by the ingenious device of following the scent until he comes nearly above the place where they lie, when he has only to dig a foot or two perpendicularly; whereas, had he begun at the mouth of the burrow, he would have been forced to expend very much more labour. He also watches bird-catchers or poachers, and comes quietly and robs the snares, and limed twigs which have been laid by bi-

ped hunters. When he gets into a farmyard, he makes tremendous havoc, as he silently carries off the poultry one by one, until he is scared by daylight or by the sounds of approaching feet. When suddenly surprised his presence of mind does not fail him. His usual method is to lie as if he were dead, and then watch his chance of escape. On one occasion, a fox having been surprised in a hen-house, simulated death with such exactness, that the owner of the slaughtered poultry thought that Master Reynold had overgorged himself, and perished of a surfeit, like one of our own kings. Congratulating herself on the fate of the robber, she picked him up by the tail, and threw him out of the hen-house, when the fox picked himself up and scampered off. Another time, a peasant, finding a fox in a hen-house, aimed a blow at him, which apparently killed him. The man then took the fox up by the tail, slung him over his shoulder, and carried him out of the farmyard, intending, most probably, to decorate his house with the brush, his barn with the head and paws, and his person with the skin. If so, his meditations were speedily destroyed, for the fox had only shammed death, and, finding his inverted position uncomfortable, took measures to relieve himself by administering a severe bite where his head was dangling. The affrighted peasant immediately dropped the fox, who set off as fast as he could, leaving his would-be captor in a state of mingled fright, pain, and fury. Mr. Lloyd tells us of another fox, who displayed as much sagacity in getting out of an equally bad scrape. The animal had been caught in a pit-fall, and was lying apparently helpless at the bottom. A very stout peasant then brought a ladder, and having lowered it into the pit, descended slowly, in order to destroy the fox. Reynard, however, had not the slightest intention of being destroyed; so just as the stout peasant

placed his foot on the ground, the fox sprang on his back, then on his shoulders, and from thence to the edge of the pit, thereby deferring the intended execution to an indefinite period, and injuring in no small degree the temper of the man by whose means he had escaped.—*Our own Fireside.*



SAGACITY OF THE MOUSE.

A few years ago, the Rev. Mr. North, rector of Ashdon, in Essex, placed a pot of honey in a closet, in which, as it had been but recently built, a quantity of plaster rubbish had been left. It chanced, from some cause, that he did not go to the closet for the honey for some months afterwards, when he was surprised, as the closet had been locked, to see a mound of the rubbish had been piled against the sides of the pot, nearly to the top of it. He delayed removing it till he should try to discover how it had been heaped up. He set a trap and caught a mouse, which he had no doubt was the builder. On examining the honey too, he found that a quantity of the rubbish had been thrown into it, so as to raise it nearly to the edge of the vessel, just as the crow is said to have raised water in a jar by throwing in pebbles. Dr. Henderson, when he was travelling in Iceland, took occasion to make inquiry respecting a famous species of mouse in

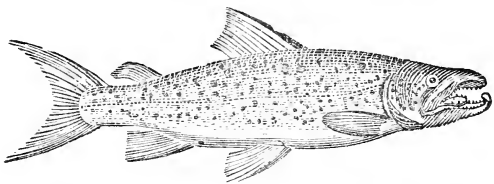
that island, which is said to have remarkable talents for navigation. Povelsen, a writer on Iceland, had related that these mice would collect in parties of from six to ten, select a flat piece of dried cow-dung, and pile in the middle of it berries, or whatever they had for food, and then, uniting their force, bring it to the edge of any stream that they wished to cross, launch it, embark on it, and range themselves round the heap with their heads joined over it, their backs to the water, and their tails pendent in the stream to serve as rudders. To this account Pennant gave credit, observing that in a country where berries are but thinly dispersed, the animals were obliged to cross rivers for distant forages. But Hooker in his "Tour in Iceland," threw discredit on the story, as mere invention. Dr. Henderson, having been apprised of these conflicting opinions, says, "I made a point of inquiring of different individuals as to the reality of the account, and am happy in being able to say that it is now established as an important fact in natural history by the testimony of two eye-witnesses of unquestionable veracity, the clergyman of Briamslaek, and Madame Benedictson of Stickesholm, both of whom assured me that they had seen the expedition performed repeatedly. Madame Benedictson, in particular, recollected having spent a whole afternoon, in her younger days, at the margin of a small lake on which these skilful navigators had embarked, and amusing herself and her companions by driving them away from the sides of the lake as they approached them.

WOLF STORIES.

Strange and horrible, and sometimes with an element of the grotesque in them, are the wolf stories which have been told; it would not be a difficult matter to collect sufficient to fill a volume; for instance,

there is that of the Russian who was travelling in a sledge with his wife and children, when he was overtaken by a pack of hungry wolves, and finding that he could not escape by any other means, threw out the latter one by one, and so gained time to reach a place of safety, for at each sacrifice thus offered, the wolves as is their habit, stopped to fight over their prey until it was devoured. A dreadful alternative this which no plea of necessity would seem to justify. Or again, of that fearful skate by moonlight down a frozen river by one whose ravening pursuers kept gaining on him until he could hear the snapping of their jaws close behind, and see the shadows of their dusky forms projected before him. Then as he suddenly turned off obliquely while his pursuers, unable to stay their rapid pace on the slippery surface, shot far ahead, he was enabled to gain upon them considerably, and by repeating this manœuvre several times, eventually to reach his home on the river's bank. With what joy he must have heard the barking of his dogs, and the shouts of his friends, in answer to his cries for help, and the retreating howls of his discomfited foes we may well imagine. Or again, take that story of the negro fiddler who, on his way to the gay and festive scenes where he was engaged to exercise his vocation, was pursued by wolves, and managed to climb on to the roof of a deserted hut or shed, and so attain a position which they could not well reach, although they made desperate efforts to do so which he feared might be successful. So he became a second Orpheus, and soothed the savage beasts with his music; while he played they sat and listened, but as soon as he left off they renewed their efforts to reach him. With dizzy brain, chattering teeth, and aching elbows, he kept on hour after hour, until the blessed daylight came, to relieve him at once of his fears and listeners, who

slunk off to the cover of the woods, casting behind many a longing, lingering look at the thankful fiddler. We cannot vouch for the truth of this story, which has in it a mixture of the grim and grotesque which is perfectly charming. According to one version of it, the guests sadly at a loss for the expected musician, set out to seek that functionary, and found him astride of the roof, singing and playing with all his might,—for he used his voice as well as his instrument,—surrounded by the most attentive audience he had ever entertained, and very rudely drove them away, and bore the violinist in triumph to minister to their amusement: surely a very selfish proceeding.



STORY OF A PIKE IN DUNHAM PARK.

When the late Dr. Warwick resided at Dunham, the seat of the Earl of Stamford and Warrington, he was walking one evening in the park, and came to a pond where fish intended for the table were temporarily kept. He took particular notice of a fine pike, of about six pounds weight, which, when it observed him, darted hastily away. In doing so it struck its head against a tenter-hook, in a post (of which there were several in the pond, placed to prevent poaching), and as it afterwards appeared, fractured its skull and turned the optic nerve on one side, The anguish evinced by the animal appeared most horrible. It rushed to the bottom, and, boring its head into the mud, whirled itself round with such velocity that it was almost lost to sight for a short interval. It then plunged about the

pond, and at length threw itself completely out of the water on to the bank. The doctor went and examined it, and found that a very small portion of the brain was protruding from the fracture in the skull. He carefully replaced this, and with a small silver toothpick raised the indented portion of the skull. The fish remained still for a short time, and he then put it again into the pond. It appeared at first a good deal relieved, but in a few minutes it again darted and plunged about until it threw itself out of the water a second time. A second time Dr. Warwick did what he could to relieve it, and again put it into the water. It continued for several times to throw itself out of the pond, and with the assistance of the keeper, the doctor at length made a kind of pillow for the fish, which was then left in the pond to its fate. Upon making his appearance at the pond on the following morning, the pike came towards him to the edge of the water, and actually laid its head upon his foot. The doctor thought this most extraordinary, but he examined the fish's skull and found it going on all right. He then walked backwards and forwards along the edge of the pond for some time, and the fish continued to swim up and down, turning whenever he turned; but, being blind on the wounded side of its skull, it always appeared agitated when it had that side towards the bank, as it could not then see its benefactor. On the next day he took some young friends down to see the fish, which came to him as before, and at length he actually taught the pike to come to him at his whistle and feed out of his hands. With other persons it continued as shy as fish usually are. Dr. Warwick thought this a most remarkable instance of gratitude in a fish for a benefit received; and as it always came to his whistle, it also proved what he had previously disbelieved, that fishes are sensible to sound.

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